ROCK PRODUCTS
THE INDUSTRY'S RECOGNIZED AUTHORITY
SEPTEMBER
1 9 4 3

# CENTRALIZED KILN CONTROL

The FLS Centralized Kiln Control concentrates at one convenient point the control switches of the kiln and auxiliary equipment, sequence interlocks, alarms, signals, and instruments showing speeds, drafts, temperatures, etc., constantly presenting to the kiln operator a clear, quick picture of the kiln's operation.

The FLS Gas Analyzer permits obtaining complete combustion of the fuel while avoiding excess air in the kiln.

Improved Operation • Improved Product • Improved Fuel Efficiency




## F. L. SMIDTH & CO.

60 EAST 42ND STREET — ENGINEERS AND MACHINERY MANUFACTURERS — NEW YORK, N. Y.

SEP 24 1943

# SPEEDS PRODUCTION SAVES COST



Open view of Williams "Slugger" Crusher showing heavy duty hammers, liners, and discs.

## WILLIAMS "SLUGGER" CRUSHES 100 POUND STONE TO 3/4" IN ONE OPERATION

THE Williams "Slugger" Crusher and Pulverizer now makes it possible to crush large pieces of stone weighing from 75 to 100 pounds to 1¼", ¾" or agricultural limestone in ONE OPERATION. This not only eliminates sledging but also does away with the unnecessary expense of a primary crusher.

The "Slugger" represents the most advanced type of equipment on the market today and with seven sizes to choose from, producing from 4 to 30 tons per hour, every producer whether large or small can profitably install a Williams.

### WILLIAMS' FINE GRINDING EQUIPMENT WITH AIR SEPARATION . . .

For faster, more efficient fine grinding of limestone, lime, coal, talc, etc., there is a Williams Roller Mill with Air Separator to fit your requirements. Finenesses from 100 to 400 mesh.



Williams also builds Impact Mills with Air Separation, Mechanical Air Separators for classifying finely ground material or taking the fines out of dry material.

**WILLIAMS PATENT CRUSHER & PULVERIZER CO.**

800 St. Louis Ave. St. Louis, Mo.

THE WILLIAMS PATENT CRUSHER & PULVERIZER CO. ST. LOUIS, MO. U.S.A. TRADE MARK REG. U.S. PAT. OFF.

# Williams

OLDEST AND LARGEST BUILDERS OF HAMMERMILLS IN THE WORLD

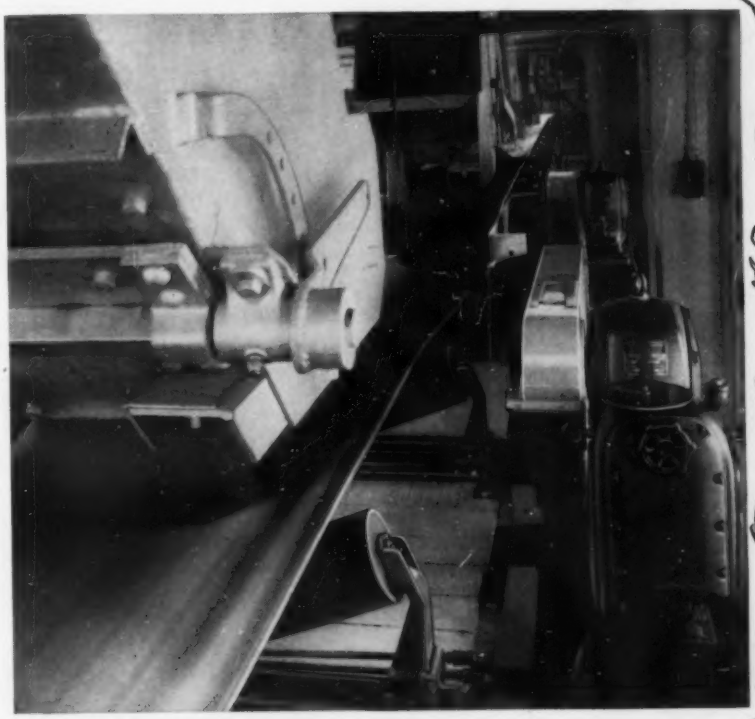
# Williams

PATENT CRUSHERS GRINDERS SHREDDERS

# BELT CONVEYOR *Gremlins* RIDE FOR A FALL



Two 36-in. wide Link-Belt belt conveyor feeders handling crushed ore from mill ore bin to collecting belt conveyor. Each of these conveyors can be varied in speed from 10 to 30 f. p. m. by means of Link-Belt P. I. V. Gear Variable speed transmissions shown in illustration.



## WHEN YOU DO THESE SIX THINGS:

### 1. KEEP INSTALLATION CLEAN

Make periodic inspections daily to see that there is no accumulation of material that has spilled off the belt.

### 2. USE IMPACT IDLERS . . .

Rubber-tread impact idlers at loading and transfer points will prolong belt life by preventing cutting and bruising.

### 3. "TRAIN" THE BELT . . .

For efficient operation, keep both the carrying and return runs of a conveyor belt practically centered on the supporting idlers.

### 4. MAINTAIN THE "TRAINING"

Maintaining the "training" of the belt on the conveyor is assured at all times if self-aligning idlers are used.

### 5. MAINTAIN BELT TENSION

Proper belt tension eliminates excessive belt sag between idler rolls and prevents unnecessary wear.

### 6. LUBRICATE PROPERLY . . .

Never over-lubricate idler rolls and other moving parts, for too much lubrication is as bad as too little.

**GREMLIN CHASERS:** Inspect equipment regularly—and make replacements with genuine Link-Belt parts when necessary. Link-Belt manufactures a complete line of idlers, pulleys, bearings, take-ups, drives, trippers, etc., built for every service.

# LINK-BELT
## BELT CONVEYOR EQUIPMENT

LINK-BELT COMPANY
Indianapolis, Chicago, Philadelphia, Atlanta, Dallas, San Francisco, New York, Toronto. Offices, warehouses and distributors in principal cities.

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# IN THIS ISSUE

SEPT., 1943
VOL. 46 • NO. 9

**Basing Point Price Issue** — *Nathan C. Rockwood* — 37

**News About People** — 38

**Hints and Helps for Superintendents** — 40

**News of the Industry** — 44

**New Machinery** — 46

**Span River with Belt Conveyors for Fontana Dam Aggregates**
Produce stone sand with rod mills. Hydro-separator handles rod mill discharge and classifiers removes slimes
*Walter B. Lenhart* — 49

**Over Mile of Belt, Quarry to Mill**
National Cement Co., Birmingham, Ala., installs conveyor belt system of new design
58

**Transportation Units to Fit the Job**
Andersen Sand Gravel Co. hauls aggregates in specially designed 40-ton capacity tractor-trailer units. Operate seven ready mix trucks
66

**Elementary Principles of Flotation**
Part 1: Filming Processes
*John Dasher* — 72

**Lime Forum—Reinforced Brick and Concrete Substituted for Steel Kiln Shells**
*Victor J. Azbe* — 78

**Chemists' Corner—Proportioning a Cement Raw Mix**
Method based on control of three constituent materials in cement clinker.
*John A. Shanks* — 80

**Concrete "Boards" for Farm Buildings** — 84

**Expanding Sales Through Dealers**
Little Rock Lumber and Coal Co., Alma, Mich., installs high production equipment to manufacture cinder concrete block
*Walter B. Lenhart* — 86

**Concrete Block Prevents Sabotage** — 90

**Crushed Stone Association Directors' Meeting** — 95

**Sand and Gravel Association Directors' Meeting** — 96

**Ready Mixed Concrete Association Directors' Meeting** — 98

Rock Products is published monthly by Tradepress Publishing Corporation, 309 West Jackson Blvd., Chicago 6, Illinois; Horace T. Hunter, President; John R. Thompson, Vice-President and Treasurer; J. L. Frazier, Secretary. Copyrighted 1943. Entered as second-class matter, Jan. 30, 1936, at the Chicago, Ill., post office under the act of March 3, 1879.

**SUBSCRIPTION INFORMATION**
Subscription Price: United States and Possessions, Mexico, Cuba, Canada, $2.00; and $4.00 to foreign countries. Twenty-five cents for single copies. Indexed in the Industrial Arts Index.

Canadian Subscriptions and remittances may be sent in Canadian funds to ROCK PRODUCTS, P. O. Box 100, Terminal 'A,' Toronto, Canada.

To Subscribers—Date on wrapper indicates issue with which your subscription expires. In writing to have address changed, give old as well as new address.

**Charles Hoefer, Jr.**, Manager; **L. V. Rodda**, Circulation Manager; **C. P. Teats**, Field Representative; **C. M. Hancock**, Production Manager.

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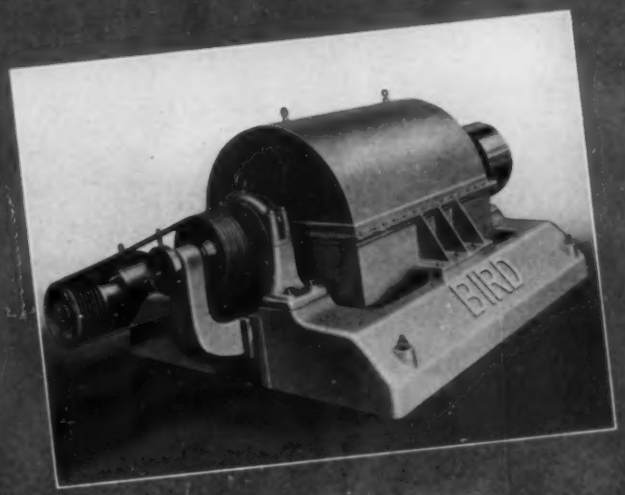
13½'

10'

# THINK WHAT YOU CAN DO IN THIS SMALL SPACE...

*With A*

# BIRD CLASSIFIER




You can take 2 tons of slurry a minute right from the mill, whisk out all the fines and send them to the kiln without further treatment, returning the oversize for re-grinding.

Another thing you can do is get exactly the right fraction for flotation from slurries of heavy solids content, and the amount of lime in the unfloated fraction will be notably higher... Still another is to classify any cement ingredient by itself and put it in better shape to do the job.

Now is a good time to look into the Bird Classifier, find out exactly what it can do for you and how little it will cost to do it. Get in touch with

## BIRD MACHINE COMPANY

SOUTH WALPOLE • MASSACHUSETTS

BUILDERS OF BIRD CONTINUOUS CENTRIFUGAL FILTERS

# ☑ Check Your

***Here are 5 of the most dangerous bottlenecks threatening U.S. Processors today. Check yours — then note how much help you can get from Allis-Chalmers Cooperative Engineering to crack them wide open!***

☐ **Unexpected Breakdowns?**



**How many of your key machines were built for 24-hour-day service?**

☐ **Lagging Schedules?**



**Maybe you have a bottleneck — an added machine would load up all units.**

## WHICHEVER THEY ARE— CALL ON ALLIS-



**Teamwork!** When you specify Allis-Chalmers, our engineers work closely with your staff!

IT'S PLENTY TOUGH to crack bottlenecks today... but remember there's *one* company that *specializes* in helping you do it — Allis-Chalmers!

Here's an organization that builds *all types* of basic processing equipment . . . in the full line highlighted below.

Because it's the business of Allis-Chalmers engineers to know *all phases* of basic processing, they know ways to make units of *existing equipment* "team up" better... to give you immediately increased war production.

Another important plus that comes from building *all* types of equipment: Allis-Chalmers engineers are *not* forced to

*Only Allis-Chalmers Makes a Complete Line of this Equipment!*

| Jaw Crushers | Gyratory Crushers | Crushing Rolls | Pulverators |
|---|---|---|---|
|  |  |  |  |
| All-steel primary and fine reduction. ¼"-12" product. | High-speed primary and secondary. 3" to 60" size feed. | 6 different types. Reduction ratios from 5-1 to 10-1. | "Multi-impact" reduces non-abrasives to cubical shape. |

# Bottlenecks!

## ☐ Labor Shortage?




Do you use any men unnecessarily? Processing is a *machine* industry!

## ☐ Obsolete Machinery?




Some machines that used to "get by" need too much maintenance today.

## ☐ Overworked Engineers?



Outside engineering cooperation might solve many problems quickly.

# CHALMERS!

recommend some *one* type. *What you need* dictates their recommendations, *not what they've got!*

If you have a bottleneck to break, Allis-Chalmers Cooperative Engineering is ready to help. Call your nearby district office. Or write ALLIS-CHALMERS, MILWAUKEE, WISCONSIN.




A 1578-B



**Models** of processing machinery in Allis-Chalmers laboratories reproduce conditions in your plant — help eliminate guesswork!

| Grinding Mills | Pyro-Processing | Vibrating Screens | Motors & Drives | Centrifugal Pumps |
|---|---|---|---|---|
|  |  |  |  |  |
| 30 types — over 3600 in service on every material. | Kilns, coolers, dryers, roasters engineered in all types. | Efficient separation and dewatering — 8 different types. | Unbeatable team—Lo-Maintenance Motor & Texrope V-belts. | Largest line, highest efficiencies — built with motors. |



# YOUR SAFETY COMMITTEE WILL APPROVE

# "NITRAMON"

## —THE SAFER BLASTING AGENT




**TODAY** safe practice in quarry operations is more important than ever before. As a result those responsible must strive to promote and improve safety records.

**"NITRAMON,"** a totally different type of blasting agent, is one of the answers to this problem. It is safer to handle and safer to use. It cannot be detonated by the strongest of commercial blasting caps, by flame or drill bits, by friction or falling objects.

**"NITRAMON"** comes in watertight containers. It is non-headache-producing and absolutely non-freezing. There are many grades comparable in strength to dynamites ranging from 40% ammonia dynamite to 75% gelatin.

For maximum safety in quarry blasting operations, you can rely upon **"NITRAMON."** Ask your Du Pont representative to show you how it may save you time and reduce costs.

E. I. du Pont de Nemours & Co. (Inc.), Explosives Dept., Wilmington, Delaware.

**PRIMING "NITRAMON"**

*A special primer consisting of "Nitramon" itself and a relatively insensitive high explosive is strongly recommended to detonate* **"NITRAMON."**



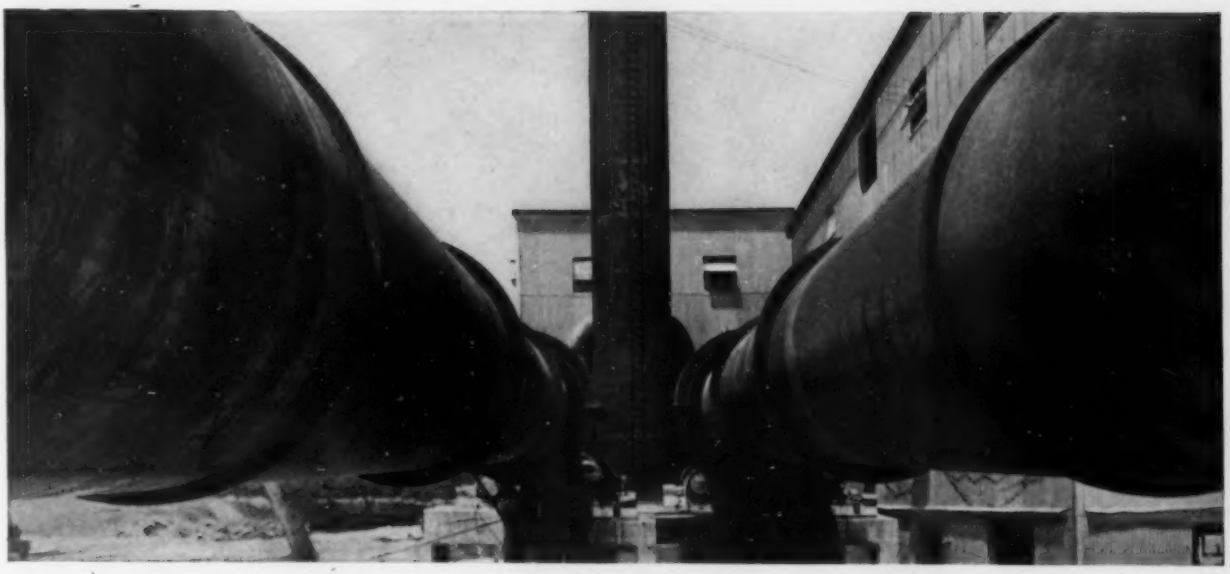
**Back the attack with War Bonds! Buy an EXTRA Bond during September.**

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**NITRAMON**
TRADE MARK

**the safer blasting agent**

# Fifty feet long — or five hundred



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Rotary Kilns
Rotary Coolers
Rotary Dryers
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Scrubbers
Evaporators
Jaw Crushers
Gyratory Crushers
Reduction Crushers
Crushing Rolls
Grinding Mills
Ball Mills
Rod Mills
Tube Mills
Pug Mills
Wash Mills
Feeders
Rotary Screens
Elevators




## the Shells are in one piece!

Whether it be a small unit built of light steel sheet or the largest made of very heavy plate, EVERY Traylor Rotary Kiln, Cooler or Dryer Shell is literally a single piece, smooth, straight and generously strong to cope with the severest of service. This type of construction was pioneered by Traylor years ago.

By our original and constantly improved methods the edges of the plates forming the complete shell are so thoroughly fused that the joints are stronger than the parent metal. And smooth, too—in fact, if the surfaces were to be machined it would be difficult to see the joints.

This type of kiln shell contributes measurably to securing and maintaining alignment, and renders Traylor Rotary Kilns, Coolers and Dryers thoroughly dependable, but this is not all that can be said. Into each and every unit are built many ideas, represented by devices to increase efficiency and decrease costs, ideas based upon our engineers' intimate knowledge of the work to be done, knowledge gained by constant study and observation.

Right now, Traylor Rotary Kilns, Coolers and Dryers are procurable only for the furtherance of the war program, but our technical facilities are available for planning for a future that will certainly be sharply competitive. We invite correspondence from forward looking operators.

**SEE OUR BULLETIN 115**

# TRAYLOR

## ENGINEERING & MANUFACTURING CO.

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# If you want your wire rope to last

# DON'T FORGET LUBRICATION!




LACK of proper lubrication is one of the most frequent causes of premature wire rope failure. Yet lubrication is such a simple means of extending rope life that it seems incredible that rope users ever overlook it. But they do.

Every U·S·S American Tiger Brand Wire Rope comes to you from the factory, properly lubricated and ready for service. But factory lubrication, no matter how efficient, will not last the life of the rope. Field lubrication at regular intervals is absolutely essential. Wire Rope is a machine, composed of many working parts. It requires lubrication to reduce frictional wear.

Use a well-tested lubricant like Tiger-Lube which has been developed through years of study and research. Be sure that the rope surface is clean and that the lubricant is applied uniformly and thoroughly.

Lubrication is insurance against corrosion and is the safest way to prevent excessive internal and external rope wear. Lubrication will materially assist in controlling the wear on sheaves and drums and in prolonging rope life, resulting in increased operating efficiency.



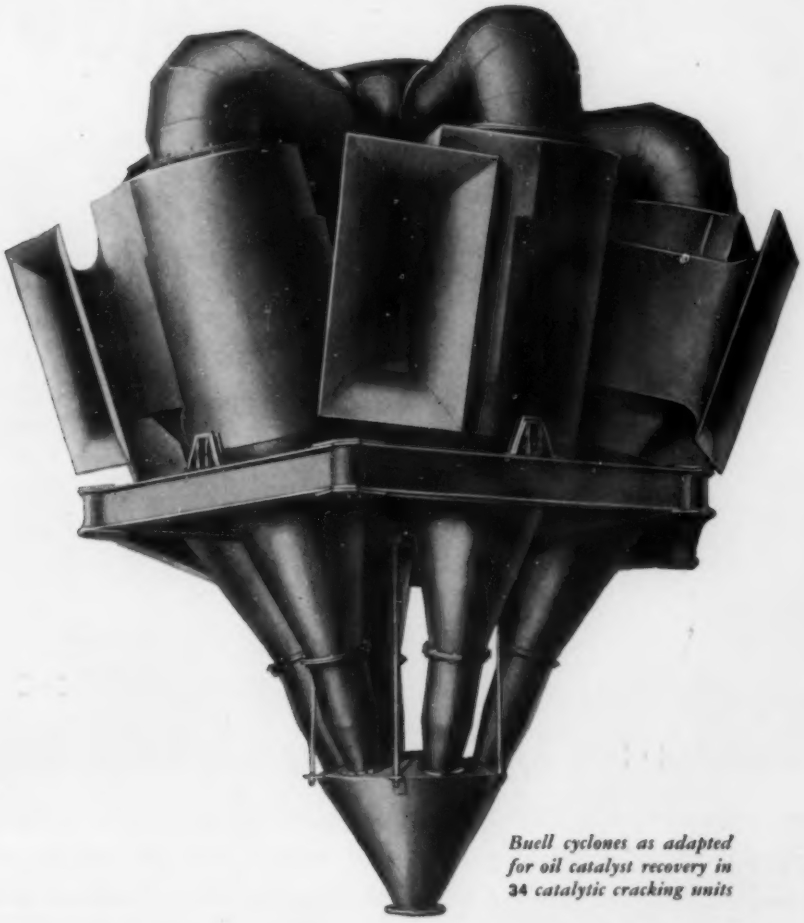

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**UNITED STATES STEEL**

# *Aide-de-Camp to a*
# "CAT CRACKER"



*Buell cyclones as adapted for oil catalyst recovery in* **34** *catalytic cracking units*



## Buell Dust Recovery Systems help make 100-octane gas...

"CAT CRACKER" is the oil industry's nickname for the new catalytic cracking processes now producing high-octane gas—processes calling for the highest efficiency in the recovery of catalyst dust. It is significant that so many leading oil companies have chosen Buell (van Tongeren) Dust Recovery Systems for this important work.

The remarkable natural and synthetic catalysts used are both expensive and abrasive. Buell equipment (incorporating the exclusive van Tongeren "shave-off") pays for itself many times over in the recovery of the costly, finely divided catalyst. And Buell's large-diameter, extra-heavy metal cyclones eliminate clogging and reduce abrasive wear—for long life and continuous performance.

Here, as in so many other fields, Buell leadership has again demonstrated its ability to solve difficult dust recovery problems.

*Maybe Buell can help your business... Write for Bulletin G-842, describing Buell equipment and its application in many industries*

BUELL ENGINEERING COMPANY, INC.
Suite 5000, 2 Cedar Street, New York 5, N. Y.
*Sales Representatives in Principal Cities*

buell
DUST RECOVERY SYSTEMS

*BUY WAR BONDS AND MAKE THE AXIS BITE THE DUST*

# MORE PRODUCTION PER MAN HOUR!



No man can work faster than his machine permits. This is especially true of tractor operators. To increase the tempo of stripping operations, road-building, cleaning-up, hauling, and other tractor jobs . . . give your operator a unit that "eats up" the work. Give him a 2-Cycle Diesel — the modern Diesel! There's no lost time going to work . . . no delay starting up after lunch periods. Starts like your car — INSTANTLY! Packs a real wallop, too, that carries it quickly through the toughest going — gets in there and lugs where ordinary units stall. Hangs on to overloads with steam-like tenacity — which means less gear-shifting! Maneuvers more rapidly . . . applies its power smoothly, without laboring. Keeps going 24 hours a day, if necessary, with a minimum of attention.

Fifteen per cent of our crawler tractor production is released for essential civilian requirements. See your Allis-Chalmers dealer about the availability of equipment for your needs.

2-cycle
THE MODERN DIESEL POWER

ALLIS-CHALMERS
TRACTOR DIVISION · MILWAUKEE · U. S. A.

# WARTIME PROBLEMS of New Sand and Gravel Plant SOLVED BY...

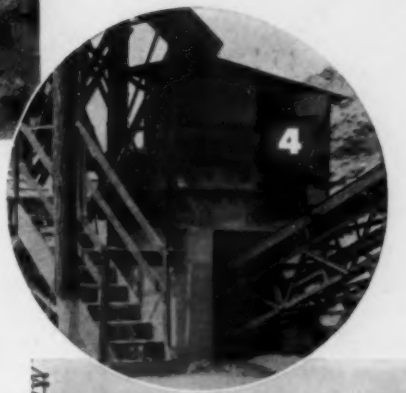
# TELSMITH






1 *Telsmith Super Scrubber*
2 *Two Telsmith Sand Classifiers*
3 *Telsmith Sand Drag*
4 *Telsmith Gyrasphere Secondary Crusher*

G-11






● Hempt Brothers, Harrisburg, Pa., are quarry and gravel plant operators. War work demands for concrete necessitated building a new plant on a large deposit near Elizabethtown, Pa. Quantity processing of the crumbly quartzose conglomerate requires generous crushing, screening, classifying capacity. Yet co-operation with the war effort meant holding the use of new machinery and critical materials to a minimum.

One of those tough, it-can't-be-done problems. But Telsmith Engineers came through with the right answer and the right equipment. The result is a balanced, flexible, smooth-working plant turning out 75-100 tons per hr. washed silica sand.

From a scalping screen following the primary breaker, plus ¾″ material goes to a No. 36 Telsmith Gyrasphere Secondary Crusher in closed circuit with the scalper. Minus ¾″ goes to a 4′ x 10′ Telsmith double deck Pulsator Screen over a 35-ton steel bin. One size of crushed gravel is stored in bin; and plus ⅜″ pebbles are chuted to a 40″ x 22″ Telsmith high speed, roller bearing Double Roll Crusher with adjustable flow belt feeder. This crusher is also in closed circuit. Minus ⅜″ sand size goes through a 72″ x 10½′ Telsmith Super Scrubber and then to two large-bowl, 3-side overflow, twin-screw Telsmith Sand Classifiers making concrete sand which goes to a 200-ton steel bin or to ground storage. Classifier overflow is flumed to a 60″ x 30′ Telsmith Sand Drag which produces plaster sand. For details on Telsmith equipment *get Bulletin G-11.*

**SMITH ENGINEERING WORKS, 508 E. CAPITOL DRIVE, MILWAUKEE 12, WISCONSIN**

Cable Addresses: Sengworks, Milwaukee—Concrete, London

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# This is Synthetic Rubber

Synthetic rubber is a new basic raw material which is processed, treated and formed in much the same way as natural rubber. And...like natural rubber...it is of different types, is capable of many variations.

Synthetic rubber is manufactured from gasoline, alcohol, coal and gases kept liquid under pressure and is now being made in five basic commercial types. Each type has distinct properties and characteristics that fit it for specific tasks. For some, synthetic rubber is superior to natural rubber. For others it is equally as good.

To determine which synthetic rubber is right for the job, however, requires a really thorough knowledge of rubber chemistry. The manufacturer must be familiar with the properties of all five commercial types . . . Buna-S, Buna-N, Neoprene, Thiokol and Butyl.

United States Rubber Company uses all five basic types of synthetic rubber and is thoroughly familiar with the characteristics, properties and suitability of each type to the task for which it is intended. As the nation's largest user of synthetic rubber, "U.S." has built up a tremendous backlog of knowledge of this new basic raw material and experience in processing synthetic rubber to handle a certain definite job. Today, this knowledge and experience are being drawn upon to the fullest in supplying the Armed Forces and war industries with the synthetic rubber and synthetic rubber products they need.

*A copy of "The Five Commercial Types of Synthetic Rubber" will be a valuable addition to your files.*

*Listen to the Philharmonic Symphony program over the CBS network Sunday afternoon, 3:00 to 4:30 E. W. T. Carl Van Doren and a guest star present an interlude of historical significance.*

1230 Sixth Ave., Rockefeller Center, New York 20 •

**UNITED STATES • RUBBER COMPANY**

# HE MIXES LOW-SLUMP CONCRETE FASTER...




HIGH-DISCHARGE truck-mixing was a troublesome problem child for civil engineers and contractors not very long ago. Discharge was slow; the drum and blades wouldn't scour; the mixing actions balked at handling low-slump concrete.

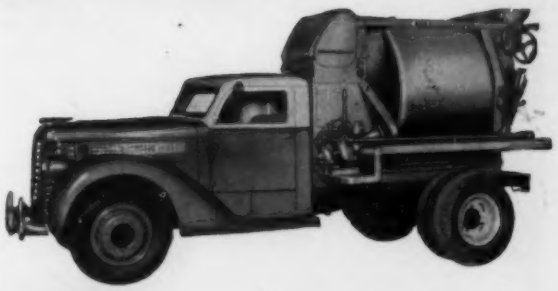
Rex Mechanical Engineering—Rex M. E.—found the answer for all in a blading design which makes the mixing action go uphill, *in the discharge direction.*

This is of extreme importance in the early stages of all concrete mixing, as otherwise the main mass tends to rotate with the drum, and the mixing is delayed.

The Rex mixing action makes discharge faster. The drum and blades are self-cleaning—scoured from end to end. There is no pocketing, no bulking, no building up of concrete.

Mixing dry or low-slump concrete is speeded up as much as 50 to 100%.

It is one of many inventions that Rex Mechanical Engineering —Rex M. E.—has provided in machines for mixing concrete, placing concrete and for removing water at maximal efficiency and minimal cost and waste.



REX **CONSTRUCTION MACHINERY**

*Concrete Mixers • Moto-Mixers • Pavers • Mortar and Plaster Mixers • Speed Prime Pumps • Pumpcretes*

**CHAIN BELT COMPANY *OF MILWAUKEE***

# ANOTHER "FIRST" FOR VULCAN



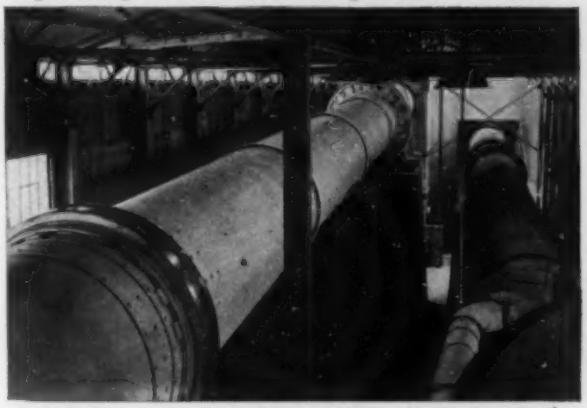
Vulcan Rotary Kilns and Coolers at Plant of Dominion Magnesium, Ltd., Ontario, Canada. As Kiln and Cooler at left above (7' x 120' and 4' x 40' respectively), are closer to camera they appear larger than units at right which are actually bigger, being 8' x 150' and 6' x 60'. The smaller units, at left, which had previously been used elsewhere were installed first. The larger Kiln and Cooler were designed and built especially for this job, and had just been installed when the photograph was taken.

# ROTARY KILNS

## ...Calcining Dolomite at Dominion Magnesium's Pioneer "Pidgeon Process" Plant

Vulcan not only furnished the first successful Rotary Kilns, Coolers and Dryers used in this Country for the production of cement and lime but has led the way ever since — for nearly half a century — in developing subsequent improvements and applications. It was only natural, therefore, that our equipment should have been selected for the first plant to utilize the important new "Pidgeon Process" for producing magnesium by ferrosilicon reduction of calcined dolomite.

War-time restrictions prevent giving details regarding results now being achieved but we *can* say that our Kilns and Coolers are giving "Very satisfactory service."



Overhead view of Vulcan Kilns at the Dominion Magnesium, Ltd. Plant. This view, taken from other end, shows relative sizes of Kilns more accurately than view from beneath on opposite page. The new, larger Kiln is at the left. Note patented, rivetless tire mounting now used on all Vulcan Rotary Kilns, Coolers, Retorts, etc.

Dominion Magnesium's new plant is an outstanding achievement and example of war-time plant development. We appreciate and acknowledge gratefully the opportunity Vulcan has had to participate in the design and construction of this notable installation. However, virtually all other strategic materials upon which an allied victory depends—aluminum, vanadium, synthetic rubber, etc., —are processed, at one or more stages of their production, by Vulcan Equipment. Write us regarding any present or prospective requirement for:

**Continuous Rotary Kilns, Coolers and Dryers**

**Rotary Retorts, Calciners, Incinerators, etc.**

**Crushing Rolls, Pulverizers and Grinding Mills**

**Briquetting Machines, Double-Roll Type**

**Hoists, Sheaves, Shaking-Chute and Chain Conveyors**

**Industrial Locomotives of all modern types**

*A new 12-page bulletin, No. A-375, containing illustrations and concise descriptions of all principal Vulcan products for the Rock Products and Chemical-Processing Industries will be mailed promptly on request.*




VULCAN IRON WORKS

NEW YORK OFFICE
50 CHURCH STREET

WILKES-BARRE • PA




**TOP:** Processing plants along the river edge. Tower is terminal of first conveyor crossing the river from the quarry. **CENTER:** Second crossing of river. Conveyor goes in tunnel under aggregate stockpile. Aggregate is stockpiled by 7 B-G Stackers. **BOTTOM:** General view of dam site looking upstream.



All Photos Courtesy T. V. A.

**T.V.A.** Engineers were faced with a particularly difficult aggregate handling job in constructing Fontana Dam. They solved that problem by an ingenious conveying system using 37 belt conveyors. Equipped with Barber-Greene troughing idlers and terminal machinery totalling approximately two miles of conveying equipment, the system crosses the river twice and processes the aggregate as it travels from the quarry to the dam. Shown on these two pages are some of the conveyors used in the setup as the T.V.A. Engineers worked it out.

**TOP:** View of aggregate processing plants. **BOTTOM:** Dam under construction showing B-G Conveyors bringing raw aggregate to batch plant and conveying mix to the forms.

**BARBER-GREENE**

**AURORA, ILLINOIS, U. S. A.**



# 4F SHOVEL PARTS *Reclassified* to 1A!



**Stoody Self-Hardening prolongs life of wearing parts—is easy to apply—bonds equally well with Manganese or Cast Steel.**

**When shovel parts become worn and efficiency is lost, they can be rebuilt to last longer than new. How?—by protecting those areas filled in with high carbon or manganese electrodes with highly wear-resistant Stoody Self-Hardening. Deposits of this alloy on worn shovel parts give greater wear resistance than original factory parts—and double the life of parts built up entirely with manganese or other ordinary electrodes.**

**Stoody Self-Hardening is an alloy of chromium, manganese, carbon, molybdenum and iron, having exceptional toughness, hardness and wear-resistance. It bonds equally well with cast steel and manganese, can be readily forged, and is perhaps the easiest of all hard-facing electrodes to apply. The price—50c per pound, F.O.B., Whittier, California. Priority requirements are AA-4 or higher. A trial order of 100 pounds will prove the merits of Stoody Self-Hardening on wearing shovel parts. Order today!**

**STOODY COMPANY**
**1129 WEST SLAUSON AVENUE • WHITTIER, CALIFORNIA**



**CASE HISTORY:** *New Tumblers for this 2½ yard shovel lasted only 4 months and the contractor was able to obtain another 4 months' service by rebuilding with high carbon electrodes. An additional application of Stoody Self-Hardening over the high carbon, however, increased service to 1½ years. Stoody Self-Hardening provides comparable life extensions when applied to idlers, pads, teeth and bucket lips.*

## STOODY HARD-FACING ALLOYS

*Stop wear . . . Eliminate Repair*


THE WAR COULD BE LOST RIGHT HERE!
Lost yardage in raw materials could mean a lost cause. To guard against such a catastrophe, many of the Nation's open pit ore and coal producing mines rely on MARIONS to maintain top output. The amazing production figures released recently on tanks, planes and guns speak well for MARION'S performance. Everywhere, MARIONS are working for Victory.
THE MARION STEAM SHOVEL CO. • MARION, OHIO
MARION
SHOVELS • DRAG LINES • CLAM SHELLS
CRANES • PORTAL CRANES • WALKERS
WORKING FOR VICTORY: DIGGING — Coal • Magnesium • Iron Ore • Copper Ore • Bauxite • Manganese • Nickel • Molybdenum • Sand & Gravel • Clay MATERIAL HANDLING — Shipbuilding and Cargo Loading BUILDING — Airports, Ordnance Plants, Arsenals, Army Camps, Marine Bases, etc.
MARION TYPE 401
1301
FOR VICTORY BUY UNITED STATES WAR SAVINGS BONDS AND STAMPS

# Another OUTSTANDING JOB by CONTINENTAL



National Cement Company, Ragland, Alabama, opening a new quarry, was confronted with the problem of handling crushed stone one and one-quarter miles from quarry to mill stock pile. After considering all methods of haulage, the management, in conjunction with Continental engineers, designed a Belt Conveyor System giving a cost per ton for handling considerably under any other system considered.

The complete Conveying System is made up of seven Main Conveyors, the overall centers of each based on the topography, but all using the same size motors and drives for interchangeability. Continental equipment is used throughout. The proven low cost (less than 1c per ton) for handling this material has fully justified the management's decision to move their crushed stone via Continental Belt Conveyors.

We are proud of Continental's part in designing this equipment to move stone at a minimum cost per ton, low maintenance and a minimum of labor.









*Our Belt Conveyor Engineering Data Book, ID-105 is just off the press. Contains complete information on Belt Conveyors. Write for a copy today.*

INDUSTRIAL DIVISION

**CONTINENTAL GIN COMPANY**

BIRMINGHAM, ALABAMA

CGC ATLANTA • DALLAS • MEMPHIS CGC

# CEMENT MIXER SINGIN'



## Boss happy, too, because
## Bemis RIP-CORD Closure
## Saves so much time on the job . . .

The cement worker's melody may be a little off key, but it comes from the heart. For the cement he is using comes in cotton bags closed with Bemis Rip-Cord Closure.

The Rip-Cord Closure can be opened easily without removing gloves . . . without tools . . . without tediously picking at wire or cord ties . . . without damaging the bag. Just a quick jerk on the rip cord and the bag is ready to empty.

Rip-Cord closing is efficient on your production line . . . brings economies on new bags . . . conserves storage space . . . increases the life of multi-trip bags as much as 50%.

Why not look into the possibilities of Rip-Cord economy and sales appeal for your product!

### ASK THE MAN WHO OPENS THE BAG



If you want proof of the sales appeal and efficiency of the Rip-Cord Closure, ask the man who opens the bag. He'll tell you how a quick jerk opens the closure without damaging the fabric of the bag. This saves time and trouble . . . increases bag salvage. Rip-Cord closing may be used on any type of cloth cement bag.

## BEMIS BRO. BAG CO.

*Better Bags For 85 Years*

OFFICES: Baltimore • Boston • Brooklyn • Buffalo • Charlotte • Chicago Denver • Detroit • East Pepperell • Houston • Indianapolis • Kansas City Los Angeles • Louisville • Memphis • Minneapolis • Mobile • New Orleans • New York City • Norfolk • Oklahoma City • Omaha • Peoria St. Louis • Salina • Salt Lake City • San Francisco • Seattle • Wichita

MAIL COUPON FOR COMPLETE DETAILS

Bemis Bro. Bag Co., 410 Poplar Street, St. Louis, Missouri

Please send complete details on efficient Bemis Rip-Cord Closures.

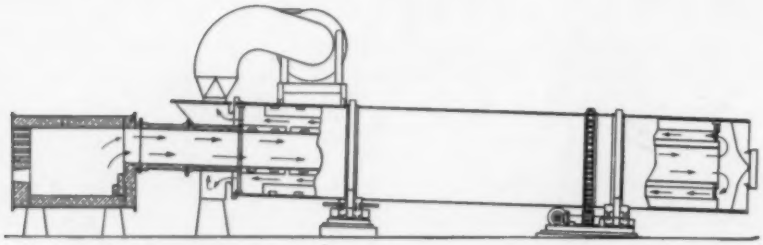
*Name* _____

*Company* _____

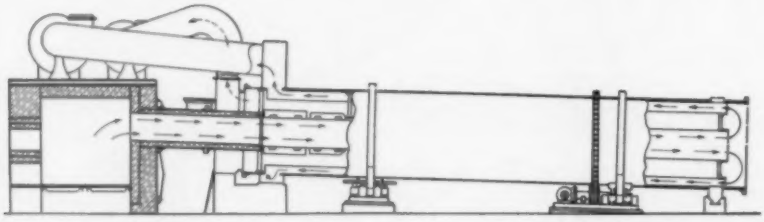
*Street* _____

*City* _____ *State* _____

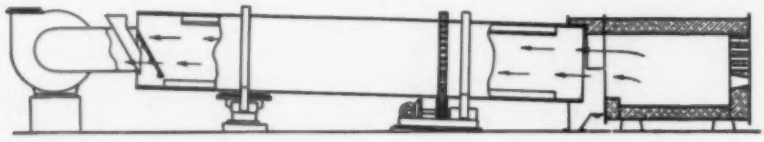
# For Your Sand Drying Problem



The class "XA" Ruggles-Coles Semi-direct heat Dryer has a high thermal efficiency giving the lowest fuel cost. It is applicable over a wide range of sand drying requirements.



For extremely fine sand without contamination from combustion gases and with minimum dust the "XB" type indirect dryer is used.



When fuel economy is not a prime consideration or subsequent processing requires dry sand at high temperatures and many other requirements, the "XF" counterflow or parallel flow Dryer is preferred.

Write for Bulletin 16-C

We also manufacture Hydro-Classifiers, Scrubbers, Thickeners, Rod, Ball and Pebble Mills for the production and preparation of sand.

**HARDINGE**

**COMPANY, INCORPORATED - YORK, PENNSYLVANIA**

122 East 42nd Street, New York, N. Y.
205 West Wacker Drive, Chicago, Illinois
501 Howard Street, San Francisco, California
200 Bay Street, Toronto, Ontario, Canada

# WANT LONGER BEARING LIFE?

## *Want Less Down Time?*




# SIMPLIFY Load Stresses *the* ROLLWAY *Right-Angle Way*

By carrying every load—both radial and thrust—at right angles to the roller axis, Rollway's solid cylindrical roller bearings automatically split the load into the two fundamental components of *pure* radial and *pure* thrust. That reduces the load stresses per roller and per bearing. It eliminates all compound loads, and all oblique resultants. You get more accurate engineering of the bearing to the job. You get a bearing which lasts longer under heavier loads and continuous running. Downtime for maintenance and replacement is substantially reduced.

*Follow this*

**BASIC BEARING PRINCIPLE**

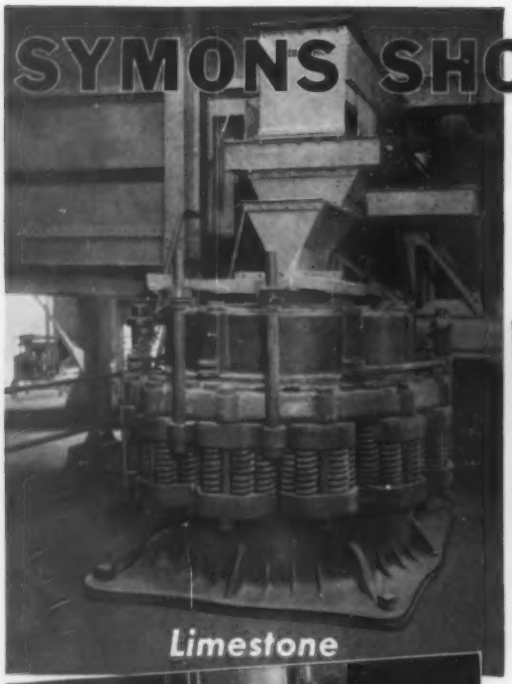
- **Carry all radial loads at right angles to the roller axis.**
- **Carry all thrust loads at right angles to the roller axis.**

## Standard Sizes for Most Applications

Rollway has developed a large list of types of solid cylindrical roller bearings in both SAE and American Standard metric sizes, each having definite characteristics to meet exacting needs. Take full advantage of this wide choice of types and sizes. Let Rollway's specialized bearing experience help you in your choice. Just send a sketch or detailed description of your machine design or bearing problem. A confidential bearing analysis and recommendation will be returned to you without cost or obligation.

**ROLLWAY BEARING COMPANY, INC., SYRACUSE, NEW YORK**

BUILDING HEAVY-DUTY BEARINGS SINCE 1908 **BEARINGS**




# SYMONS SHORT HEAD CONE
## *for making those minus ½ inch sizes*

**• • Still the world's outstanding crusher for fine reduction of all materials • •**







Making minus half inch material is a field for which the Symons Short Head Cone is primarily adapted. That so many of the larger producers of stone, gravel and slag should standardize on this crusher is evidence of its superiority for this class of work. Producers engaged in making those finer sized materials for black top and other types of stabilized roads will find this crusher exactly suited to their needs. There is no guesswork in the production of these fine materials with Short Heads. Obtain just the sizes you require in quantities that meet your demands and at a crushing cost which will assure of greater profit by doing your fine reduction crushing with a Symons Short Head Cone.

Write us for further particulars on this Short Head Crusher, the solution to your fine crushing problems.

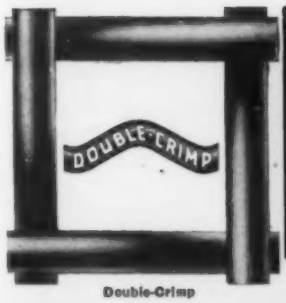
**NORDBERG**
**MFG. COMPANY**
**MILWAUKEE, WIS.**

NEW YORK
60 East 42nd Street

LOS ANGELES
Subway Term. Bldg.

TORONTO
Concourse Bldg.

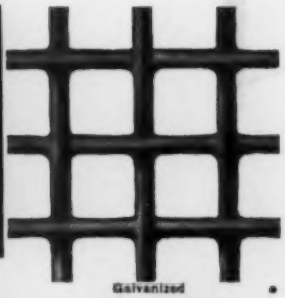
LONDON
Brook House



Double-Crimp

# The "Perfect"

## Wire Cloths and Screens

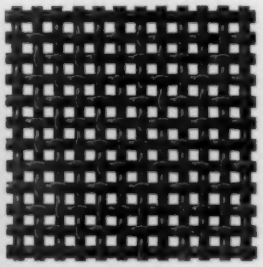

Galvanized



Arch-Crimp

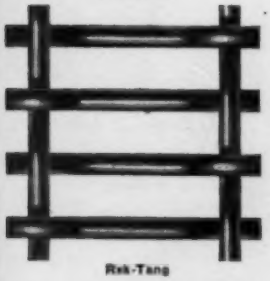
**OF**
**SUPER-LOY, STEEL**
**GALVANIZED STEEL**
**STAINLESS STEEL**
**NICKEL-CHROME STEEL**
**PHOSPHOR BRONZE**
**BRASS**
**COPPER**
**MONEL**
**NICKEL**
**ALUMINUM**

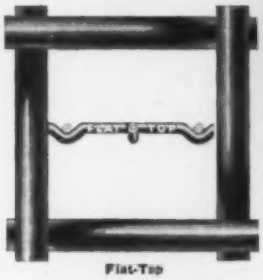
**ANY SPECIAL METAL FOR ANY SERVICE**


Calendered

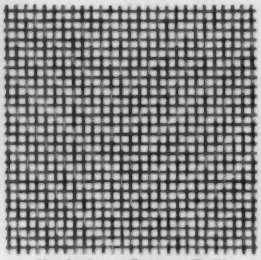


Intermediate-Crimp


Rek-Tang



Flat-Top


Herringbone Pattern Twill

### "Perfect" WEAVES

**Arch-Crimp**
Coiled
**Double-Crimp**
Double-Fill
Dutch
**Flat-Top**
**Herringbone**
**Intermediate-Crimp**
**Rek-Tang**
Selvage-Edge
Straight-Warp
Stranded
**Sta-Tru**
Triple-Warp
Twilled
Twisted-Fill
Twisted-Warp

### "Perfect" PROCESSING

Arc-Welding
Bending
Binding
Brazing

**Calendering**
Coiling
Crimping

Cutting
Dipping
Dishing
Finishing
Flanging
Flattening
Forming
Framing

**Galvanizing**

Jointing
Knuckling
Painting
Rolling
Selvaging
Shaping

Shearing
Slitting
Soldering
Spot-Welding
Squaring
Stitching
Tack Welding
Trimming

### "Perfect" PRODUCTS

Baskets
Circles
Coils
Cones
Cylinders
Discs
Forms
Leaves
Lengths

Panels
Pieces
Ribbons
Rings
Rolls
Sections
Segments
Strips
Templates

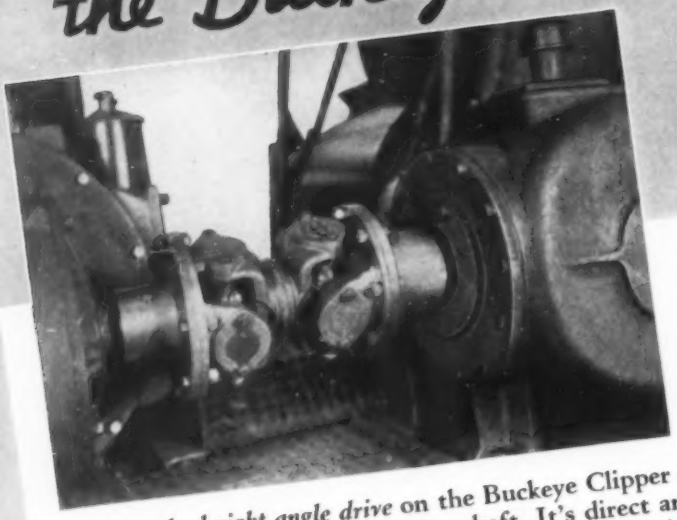
*Illustrations show items listed in bold-face type. Other wire cloths and screens will be illustrated in subsequent advertisements of this series.*

Sta-Tru

THE LUDLOW-SAYLOR WIRE CO.

ST. LOUIS, MISSOURI

# This drive helps "Wean" the Buckeye Clipper Shovel!






The *dual right angle drive* on the Buckeye Clipper provides a smoother flow of power from engine to drive shaft. It's direct and positive like the differential of a tank, truck or car. It's easier on the engine. Acceleration is smooth and fast. Result: *More yards daily with less gas or distillate.*

Fuel conservation is urgent today—after the war Clipper owners can pocket the savings that result from lower fuel requirements. Get the rest of the story in "The Age of Clippers," sent on request.



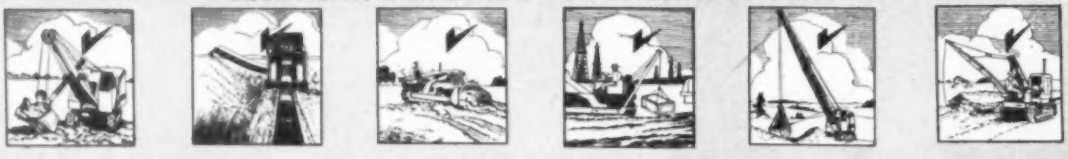

**Buckeye Traction Ditcher Co.**
**Findlay, Ohio**

Wars demand scrap.
Invest in War Bonds.
No laying down on jobs.

50 YEARS OF PROGRESS BUCKEYE

# Buckeye

CONVERTIBLE SHOVELS, TRENCHERS, BACKFILLERS, TRACTOR EQUIPMENT, CRANES AND POWER CONTROL UNITS






# His FREE TURNING Idlers

# PREVENT Friction Wear

BECAUSE of the high tonnages usually handled by belt idlers, a saving of a fraction of a cent per ton will pay their users good dividends. Improper design of any one part of a conveyor system can quickly erase that saving.

Rex Mechanical Engineering—Rex M. E.—has designed *his* free turning Rex Belt Idlers to insure a minimum of friction. A large grease reservoir with unrestricted passage to both bearings assures equal lubrication at both ends of the roll at all times. Grease agitation in both seal and reservoir insures against congealing or caking.

A unit mounting for the roller bearings assures positive and permanent alignment of the two bearings in each roll under all conditions.

These two features alone assure long life for both idler and belt. But, in addition, Rex M. E. has incorporated many other fine points—among them easy interchangeability and a triple labyrinth grease seal that keeps dirt out and grease in.

Rex M. E. and his staff of experienced engineers will be glad to consult with you on any problems in connection with the transportation of material by conveyors. Write them at Chain Belt Company, 1649 West Bruce Street, Milwaukee 4, Wisconsin.

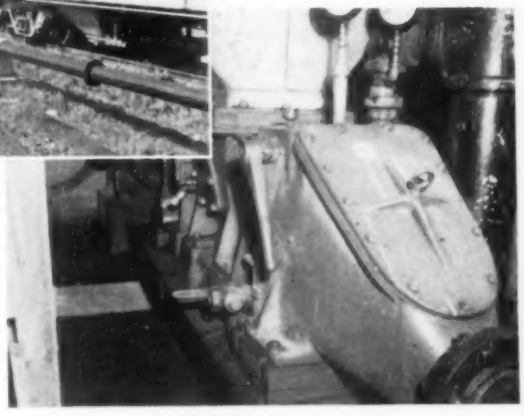


REX **CONVEYORS**

**CHAIN BELT COMPANY** ***OF MILWAUKEE***







Conveying cement from hopper-bottom cars to ready-mix concrete plant. Conveying distance 700 feet. Upper left: Ready-mix plant, showing transport lines entering storage bins. Center: Hopper-bottom cars "spotted" over Fuller-Kinyon Pump (right) in pit underneath tracks.

# CONVEY THE FULLER-KINYON WAY

**MATERIALS CONVEYED BY FULLER-KINYON SYSTEMS**

Arsenic dust
Asphalt filler dust
Bag fume
Baroid
Barytes
Catalyst
Cement (Portland)
Cement raw materials
Clays (dried)
Colox
Copper converter dust
Dextrine
Dolomite
Fuller's earth
Gypsum (raw)
Lime (quick)
Magnesite
Manganese Dioxide
Ore (pulverized)
Rock dust
Siliceous Powder
Starch (Pearl)
Starch (Powdered)

**Handle your dry pulverized materials safely through pipe lines . . . up-hill, down-hill, horizontally or vertically, overhead or underground . . . anywhere a pipe line can be run. Clean, explosion proof conveying . . . no dust nuisance.**

**Fuller-Kinyon Systems convey to or from box or hopper-bottom cars, ships, barges, silos and bins.**

**Power requirements are low. Substantial savings compare with mechanical conveyors on average conveying distances. Savings increase as distances increase. Maintenance costs are negligible.**

**Consult us when next you have a conveying problem. Our engineering department is at your service.**

P-60

## FULLER COMPANY-CATASAUQUA, PA.

CHICAGO, 3
Marquette Bldg.

WASHINGTON, 5, D.C.
Colorado Bldg.

SAN FRANCISCO, 4
Chancery Bldg.

# REMODELING THE MAP with Cedarapids



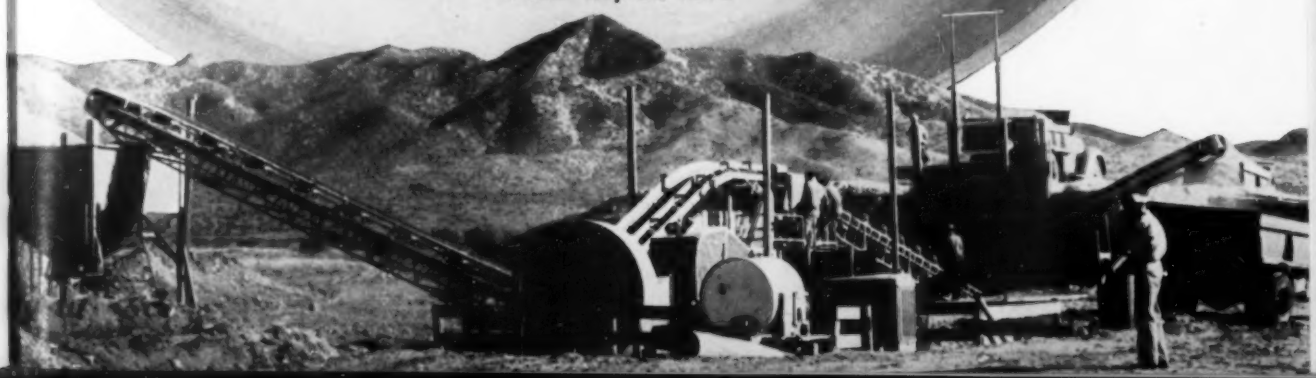

*Proved* from ALASKA to MEXICO by MORRISON-KNUDSEN CO.

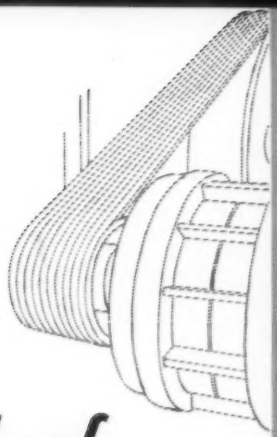
DOWN America's long Pacific Coast Line the map is changing. War Birds Nests—landing fields that were never there before mark strategic locations for America's protection.

War time construction is high pressure construction — the toughest possible test on man and machine. It is significant that Morrison-Knudsen of Boise, Idaho, a firm that bases its purchase of machinery on the job to be done, has bought Cedarapids Portable Crushing Plants again and again. From far flung Alaska to the plains of Mexico Morrison-Knudsen has been building war birds nests with Cedarapids plants. And Morrison-Knudsen is just one of the many well-known outfits that have been getting big output out of Cedarapids plants and who have bought more than one Cedarapids portable crushing plant.

Remember a repeat order buyer is a satisfied buyer. Tomorrow when peace makes the advancement and expansion of your own business possible, remember that Iowa Cedarapids plants are both war and peace time tested by the Nation's leading contractors. Come to Headquarters for aggregate producing equipment.

**IOWA MANUFACTURING COMPANY**
*Cedar Rapids, Iowa*





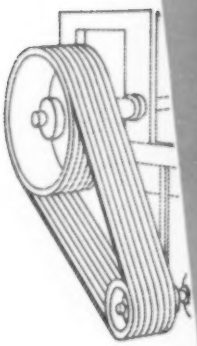
# *Thousands of*

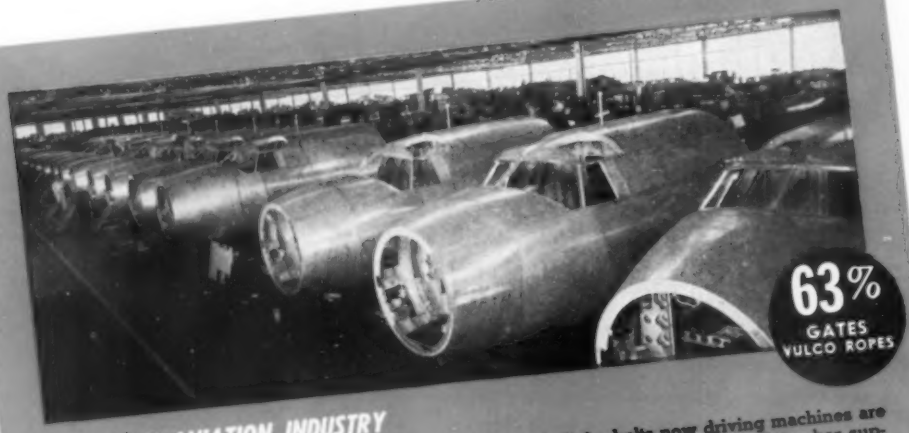
# GATES VULCO ROPES




### *BOULDER DAM*

Back in 1935 when Boulder Dam was still the biggest thing mankind had ever built, Gates Vulco Ropes were already first choice of America's leading Engineers. More than 92% of all V-belts used in building Boulder Dam were Gates Vulco Ropes.






### *AMERICAN AVIATION INDUSTRY*

In 6 of America's largest aircraft-producing units, 63% of all the belts now driving machines are Gates Vulco Ropes. Where belts are subjected to severe heat and oil conditions, Gates has supplied the aviation industry with thousands of special heat and oil resisting belts. These belts, made of a special synthetic rubber, withstand severe heat and oil conditions twice to three times as long as V-belts made with natural rubber.




### *PENNSYLVANIA TURNPIKE*

Built by 155 contractors from 18 different States—yet more than 87% of all the V-belts used were Gates Vulco Ropes.




### *GREAT CENTRAL VALLEY—California*

In many ways the greatest project of all—and, here again, 94% of the V-belts selected were Gates Vulco Ropes.




**GRAND COULEE**

Gates began supplying industry with V-belts made entirely of synthetic rubber in 1938—just when the first big units of Grand Coulee were nearing completion. On this mammoth engineering project, Gates Vulco Ropes totaled more than 76% of all the V-belts used.




**COLORADO RIVER AQUEDUCT**

American Engineers once more gave Gates Vulco Ropes predominantly first place. To build 91 miles of tunnels, 60 miles of canals, 56 miles of conduit, 3 immense aggregate plants and a diversion dam 320 feet high, 85% of the V-belts chosen for the work were Gates Vulco Ropes.

## ----in America's Greatest Industrial Projects—
## Have Been Made Entirely of
# Synthetic Rubber

It is no accident that GATES — the World's Largest Maker of V-belts—began supplying industry with thousands of V-belts made entirely of synthetic rubber *5 years before* anyone could know that supplies of natural rubber would be cut off by war.

The Gates synthetic rubber V-belt—now thoroughly tested by *years*, not *months*, of service—was in no sense developed as merely a "substitute" for rubber. It was designed to be—and in certain important applications it has *proved* itself to be—greatly *superior* to belts of natural rubber.

There is this to be kept always in mind concerning rubber:—A tree can make only one kind. In synthetic rubbers we have the choice of *many* kinds. Gates uses each kind where it best meets some particular service need.

In the Gates Special Heat and Oil Belt, for instance, a *very special kind* of synthetic rubber is used. This special synthetic rubber has the ability to withstand heat and oil much better than natural rubber can.

You know, of course, from every day experience, that your Standard Gates Vulco Ropes withstand exposure to heat and oil very well. It is when the heat or oil conditions become *excessively* severe that the Gates *special* synthetic V-belt, at a little higher price, has proved its ability to give *very much longer* wear than any other V-belt you can use.

Beyond any question, Gates has had *longer* experience and *more successful* experience in the fabrication of synthetic rubber V-belts than *any other* manufacturer.

To know of this will be to your advantage —particularly NOW when Gates' unequaled experience in making synthetic rubber V-belts can be put to use right in your own plant. You have only to look in your telephone directory and call the Gates Field Engineer. He will put at your service the full benefits of Gates' knowledge and experience *without the slightest obligation.*

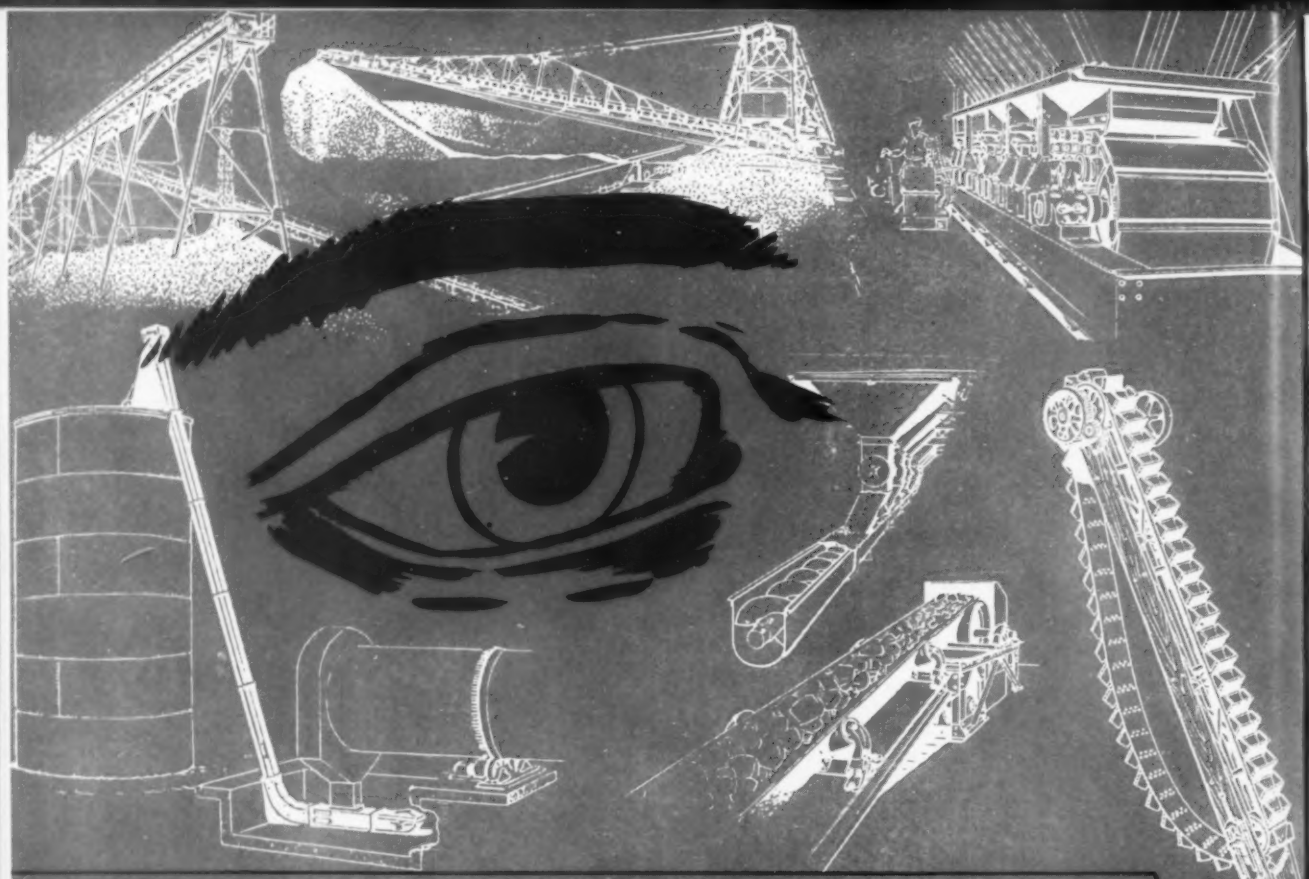
## THE GATES RUBBER COMPANY

*Engineering Offices and Stocks in All Large Industrial Centers*

439

# GATES VULCO ROPE DRIVES

**CHICAGO, ILL.** 549 West Washington
**NEW YORK CITY** 215-219 Fourth Avenue
**ATLANTA, GA.** 738 C. & S. National Bank Building
**LOS ANGELES, CAL.** 2240 East Washington Boulevard
**DENVER, COLO.** 999 South Broadway
**DALLAS, TEXAS** 2213 Griffin Street
**PORTLAND, ORE.** 333 N. W. 5th Avenue
**SAN FRANCISCO, CAL.** 1090 Bryant Street



# Look at Your Conveyor Problems

## Through *Experienced Eyes*

In your industry, yours are the experienced eyes. We, at Stephens-Adamson, have the trained and experienced eyes in the material handling field.

Here are competent engineers (who have spent entire careers with this company)—ready always to help you gain an objective view of your conveying problems. For them, the highest goal is the installation of the right conveying system for any specific job . . . Here are men thoroughly qualified to go over your present or anticipated operations with one constructive aim — to discover faster, safer, low cost ways of moving materials.

This is most significant when you start thinking—as we already are—about post-war conveying problems connected with new processes, new materials, new finished goods you may have in mind.

Call in an S-A engineer to give you sturdy pegs on which to hang your thoughts.

**STEPHENS-ADAMSON MFG. CO., 7 Ridgeway Ave., Aurora, Ill.**

# STEPHEN S-A ADAMSON MFG. CO.

*Designers and Manufacturers of All Types of*

**BULK MATERIAL HANDLING EQUIPMENT**

# *Simple,* SYSTEMATIC DRIFTER LUBRICATION CUTS REPAIRS, BOOSTS FOOTAGE



**A FEW MINUTES A DAY AND A LITTLE OIL WILL HELP YOU MEET WAR-TIME NEEDS**

Regular lubrication is a vital factor in the performance and service given by any drifter drill. It is particularly important today when the war effort and the scarcity of strategic materials demand the conservation of every piece of drilling equipment.

Here are four simple lubrication suggestions which will help you get the most out of your CP Drifters. While these suggestions apply particularly to CP MOTORdrifters they are applicable generally to other models. Detailed recommendations on hand-cranked CP Drifters will appear in future advertisements.

## HOW TO GET MAXIMUM SERVICE FROM YOUR CP DRIFTER DRILLS



1 Twice each shift, fill the drifter oil reservoir with a good grade of rock drill oil.



2 Be sure to keep the motor feed oil reservoir filled with good grade of rock drill oil.



3 Check the feed screw frequently. Keep an oil can handy, oil feed screw occasionally.



4 Before operating drifter, turn on air and make sure oil is blowing through exhaust.

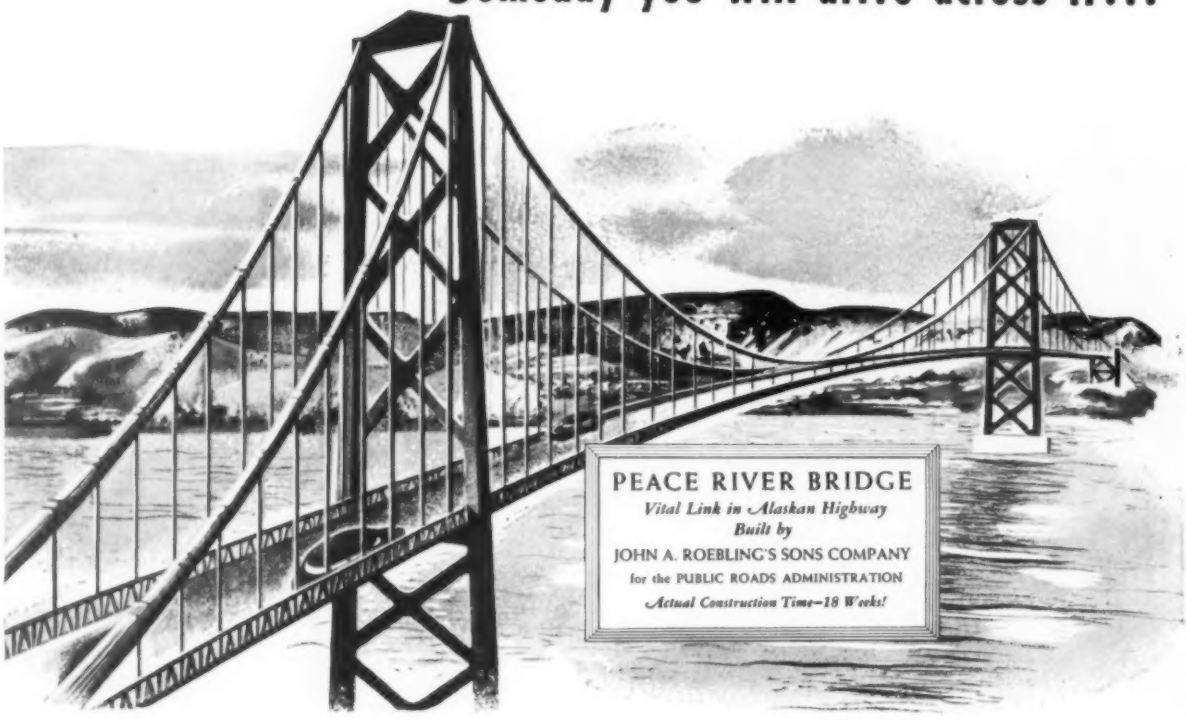
★★★★★★★★★
PNEUMATIC TOOLS
ELECTRIC TOOLS
(Hicycle...Universal)
ROCK DRILLS

CHICAGO PNEUMATIC TOOL COMPANY

General Offices: 8 East 44th Street, New York, N. Y.

★★★★★★★★★
AIR COMPRESSORS
VACUUM PUMPS
DIESEL ENGINES
AVIATION ACCESSORIES

# Someday you will drive across it...




## You're going to see the Yukon!

YOU BREAKFASTED in Dawson Creek, and now your car hums along the smooth Alaskan Highway, through the wide, pine-studded country of British Columbia. Around a curve, and suddenly, before you stretches the valley of the Peace River, spanned by one of man's most beautiful works . . . the suspension bridge. "Here's a bridge," you'll say to the family, "that helped to win the war."

You may stop a moment beside the bridge's approach, to tell them more about it. "That's a lot of river," you may say. "Two thousand feet wide, running 8 miles an hour! And here in the wilderness, a great bridge . . ."

"How ever did they get it here?" your wife asks, ever practical. "Well," you say, "it's 40 miles from rail, at Dawson Creek. They trucked it here,—100 freight car loads of material and equipment—not in balmy summer weather either. It was in the winter and spring of 1943. Bitter cold, snowing, blowing . . ." And before it reached Dawson Creek lay the urgent, anxious period of design, details, orders, priorities, manufacture and shipment, all compressed into the unbelievably short time of 18 weeks, an achievement made possible by the most complete co-operation between Roebling and the U. S. Public Roads Administration with the timely assistance of the U. S. Engineers when special priorities were required.

"There wasn't much here when the men arrived. Roebling carpenters built weather-tight shacks for the men. Roebling men cut wood for Roebling cooks who kept their stoves heated red. Disease struck, and at one time eighty men were down. From Trenton, medicine was packed, and flown by plane . . ."

"Was the river frozen?" Johnny queries.

"It was frozen fifty-four inches thick. 4½ feet of ice. So they used the ice—built their construction tower on it. Because it was the fastest way. But they gambled, for they knew the ice would thaw. The break-up would come in March. *Ice unsafe after March 15 and almost certain to be dangerous by April 1.* That was the report.

"They raised one bridge tower, then skidded their 100-ton construction tower across the ice to raise the other one. Just like a sled. They had to hurry. But they won.

"After the break-up, the bridge towers stood safely pointing to the sky. They needed motorboats, but there were none. They built them. The 'John A. Roebling' and the 'Washington Roebling,' named for America's bridge-building pioneers, helped the Army ferry as they worked to build the bridge. One operation followed another in rapid succession as Roebling, working hand in hand with P. R. A. field men maintained the tempo and rushed the bridge to completion."

"This bridge was so vital," you continue, "that as soon as the cables were spun across, they carried a gasoline pipe-line over on them. Trucks shuttled to one end of it, and from the other end toward the Alaska-based bombers and fighters,—and Tokyo . . ."

You swing your car onto the bridge and purr along, a hundred feet above the swift Peace River. "They finished it in record time. In August, 1943 . . ."

*"Surpassing their 100 year record as bridge builders, Roebling has done a magnificent job at Peace River," says Commissioner Thomas H. McDonald of U. S. Public Roads Administration. "Construction is complete . . . 7½ months after the contract's signing . . . 18 weeks after the setting of the first piece of steel . . . cutting in half the best previous construction time!"*

If you would like to read more of this Roebling saga, and own a color reproduction of the Peace River Bridge, write today. John A. Roebling's Sons Company, Trenton 2, New Jersey.

*Bridge Builder . . . Pacemaker in Wire Products* **ROEBLING**



# PMCO WELDED DIPPERS

*Manufactured on a production line basis*

## Hundreds of these ¾ yd. PMCO Welded Dippers are working for Uncle Sam on Buckeye Clipper Shovels

The demand of Army Engineers for high efficiency and speed in working on military construction projects is met with the added capacity of PMCO Welded Dippers. These 3/4 yd. dippers will handle 20% more yardage per day than a solid cast dipper of equal net weight. See your shovel man about the extra yardage you can get with PMCO Welded Dippers.



ARMY E NAVY

**We operate the largest and most complete manganese steel foundry in the United States.**

**PETTIBONE MULLIKEN CORPORATION**

Established 1880

**4710 West Division Street, Chicago, Illinois**



# MAKE FULL INSPECTION A REGULAR ROUTINE

*...Even if your rope is long-enduring*

**HAZARD LAY-SET** *Preformed*

Both steel and production time are critical. Save both by regular inspection of your machines. Look especially to your wire ropes that operate them. Wire rope is expendable. Take care of it in order to receive its full service. And this applies to all ropes including **LAY-SET** Preformed, for while **LAY-SET** outlasts ordinary non-preformed wire rope, it too will respond to proper care by lasting *still* longer. Here are a few suggestions:

- Clean and lubricate all ropes regularly. Be sure hemp core is not dry or corrosion or collapse may occur. Tighten fittings.
- Be sure you are using the proper rope for the service. Consult your Hazard representative. He will be glad to give you the benefit of Hazard's 97 years of experience.
- If sheaves or drums are critical diameter, specify Hazard **LAY-SET** Preformed because of its high fatigue-resisting quality.
- Be careful of the fleet angle. Don't let the rope deviate more than 1½° from center plane of sheave or excessive wear will result. (Note how this condition is beginning to start in this picture.)
- Don't allow bad spooling for crushing may result. Hazard **LAY-SET** Preformed spools much better than most ropes.



**HAZARD WIRE ROPE DIVISION,** Wilkes-Barre, Pa., Atlanta, Chicago, Denver, Fort Worth, Los Angeles, New York, Philadelphia, Pittsburgh, San Francisco, Tacoma

**AMERICAN CHAIN & CABLE COMPANY, INC.,** BRIDGEPORT, CONNECTICUT

**HAZARD LAY-SET** *Preformed* **WIRE ROPE**

ROCK PRODUCTS

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BROR NORDBERG, *Editor*

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TRADEPRESS PUBLISHING CORPORATION, 309 W. JACKSON BLVD., CHICAGO, ILLINOIS

# BASING POINT PRICE ISSUE

THERE IS NOTHING NEW in the most recent Federal Trade Commission's investigation of the Cement Institute except its "cease and desist" order, which apparently was a surprise. Well it might be, for during the past 25 or 30 years the industry has been almost continuously investigated by the Federal Trade Commission and unfavorably publicized in the popular press because of its distribution and pricing methods. However, the United States Supreme Court passed on the same facts in June, 1925, in the case of the Cement Manufacturers' Protective Association, appellants, vs. The United States of America, the decision of a United States district court against the industry having been appealed. The Supreme Court reversed the decision of the lower court.

The following quotation from the Supreme Court decision is significant: "A great volume of testimony was given by distinguished economists in support of the thesis that in the case of a standardized product sold wholesale to fully informed buyers, as were the dealers in cement, uniformity of price will inevitably result from active, free and unrestrained competition, and the Government in its brief concedes that 'undoubtedly the price of cement would approach uniformity in a normal market in the absence of all combinations between manufacturers'."

The present cease and desist order (briefed in ROCK PRODUCTS, August, p. 41) would of course disrupt the entire distribution system of this industry. The Cement Institute has taken its case to the United States Circuit Court, and the final decision will be of enormous importance not only to the portland cement industry, but to all rock products industries and many others which sell on a delivered price basis. Coming in the midst of a war when businessmen are concerned about meeting post-war problems, nothing yet conceived at Washington could be more disconcerting. Oddly enough, but typical of the present inconsistencies in government, at about the same time the Federal Trade Commission was taking this stand, the Office of Price Administration was legalizing prices on magnesia refractories made in Ohio and based on a shipping point in Washington State!

The Commission does not charge the cement manufacturers with a conspiracy, but merely holds the position, apparently, that the basing point price system in itself constitutes an illegal combination, regardless of how it came into being. The point apparently desired to be emphasized is that, since the net mill price to distant buyers must be less when a considerable freight rate is absorbed, the buyers near the mill are treated unfairly by being compelled to pay a relatively higher net mill price. To those familiar with the working of the basing point price system, this is neither truth or logic. An isolated mill, say with no competitor within 200 miles, would have a complete monopoly within the 100-mile radius. Obviously, the price would be all the traffic would bear. But the cost of cement, and consequently the price from year to year, would actually depend largely on the volume produced and sold, since volume is the largest cost factor. If the volume consumed within that 100-mile radius were small, the price would have to be high merely to cover costs. If the shipping radius were extended 200 miles into territory of another mill, the increased volume would lower the cost and consequently lower the price to those within the original 100-mile radius, as the competition of the two mills would also tend to lower the price—not theory but as has actually worked out in practice.

Of course, if the additional volume were at the expense of the competing mill, cutting its output below economical operation, there would be no economic gain; but in practice there is seldom a steady local market and one mill helps out others in cases of extraordinary local demand. This avoids necessity for excessive expansion of a single mill merely to meet temporary demands. It is hard for one familiar with these industries to see any logic or justice in upsetting a practice, or a system of manufacture and distribution, so obviously to the advantage of the general public, which is only interested in the over-all economy and efficiency of industry.

Back of all this controversy, through the years, is the fact that the cement manufacturers have often neglected to operate the basing point price system with enough elasticity to take care of large order government business on an f.o.b. mill price basis. Nothing irks a government official more than to ask for bids, say on several million barrels of cement, and have identical bids received. It puts him in an uncomfortable position because no matter how he awards the business, he can be and usually is accused of favoring one or more manufacturers. It may be that such a system can't be made elastic; but probably this one fact more than any other is responsible for the constant hounding of the industry, at a cost running into millions of dollars, which profits no one except lawyers. Federal Trade Commission examiners and official reporters; certainly not the public, which foots the bill in the final analysis.

Nathan C. Rockwood

# NEWS ABOUT PEOPLE

## Member of Post War Commission

J. C. ARGETSINGER, general counsel and vice-president of the Youngstown Sheet & Tube Co., Youngstown, Ohio, has been appointed a member of the commission of 21 to study and prepare for postwar needs in Ohio.

## Returns from South America

LEROY J. HARRINGTON succeeds the late W. L. Powers as acting manager of the American Cyanamid & Chemical Corp.'s bauxite operations in Arkansas. He has just returned from South America, where he spent 15 months in British Guiana in charge of a new bauxite plant.

## On Regional W.L.B.

R. B. FULLER, manager of the Florida phosphate division of International Minerals and Chemical Corp., has been appointed an employer member of the Regional War Labor Board for the southeastern states.

## Asst. Plant Manager

PAUL KIRKBRIDE has been appointed assistant plant manager of the Universal Atlas Cement Co. plant at Independence, Kans. He joined the company in 1919 and established a fine record at the Northampton, Penn., and Hannibal, Mo., plants.

## Director of Sales

T. W. SHOOK, formerly manager of operations of Basic Refractories, Inc., in Ohio and Nevada, has been appointed director of sales development and service at Cleveland, Ohio. Prior to joining the company, Mr. Shook was managing director of British Ceramic Service Co., Ltd., in Great Britain. Gordon Adams, works manager of the company's operations at Maple Grove and Bettsville, Ohio, has also been made works manager of the brucite operations at Luning, Nev. A. M. Weaning, who has been Mr. Adams' assistant since 1940, has been appointed superintendent of production at Maple Grove and Bettsville.

## New Superintendent

HERMAN URSPRUNG is the new superintendent of the Nazareth plant of the Lone Star Cement Corp.,



Herman Ursprung

succeeding Edmund C. Champion, who has retired. Complete details regarding these appointments were printed in the August issue of ROCK PRODUCTS but their portraits did not appear with the biographical sketches as they were not available at that time.

## Lone Star Appointments

JOHN O'CALLAGHAN, superintendent of the Bonner Springs, Kan., plant of the Lone Star Cement Co., has been transferred to the Birmingham, Ala., plant. Mr. O'Callaghan has been with the company since 1924 and has seen service with plants both in the United States and South America. The new superintendent of the Bonner Springs plant will be ARNOLD FAIRCHILD, chief chemist. Mr. Fairchild came to this plant in 1924 and has served steadily as chief chemist, and has operated the plant during the absence of many of the superintendents. HOMER GRIFFITH, assistant to Mr. Fairchild, has been advanced to the position of chief chemist. Mr. Griffith has been with the Lone Star plant in the laboratory since 1919.

## Peerless Stone Supt.

LEWIS DOUGHTY, formerly superintendent of the Hugo, Okla., plant of the Concho Sand and Gravel Co., Oklahoma City, Okla., has been named superintendent of the Lenapah, Okla., plant of The Peerless Stone Co. of Coffeyville, Kan. He succeeds George Robertson who has resigned because of ill health.

## Elected Directors

H. ESCHENBRENNER, president, Universal Concrete Pipe Co., Columbus, Ohio, and LION GARDINER, vice-president, The Jaeger Machine Company, Columbus, Ohio, have been elected directors of the Columbus Chamber of Commerce.

## Resigned

J. V. S. NORTON, manager of the International Minerals and Chemical Corp., Columbia, Tenn., has resigned his position to go into the Civil Aeronautical Patrol. It is reported that he intends later to engage independently in the phosphate mining field. Until his successor is appointed, O. B. Cassell of the Chicago office will be in charge.



Edmund C. Champion

## Public Relations Director

E. E. DUFFY, formerly with the Wayne County Road Commission, Detroit, Mich., and the Portland Cement Association, has been appointed director of public relations of the American Road Builders' Association. For the last two and a half years Mr. Duffy was planning secretary of the Wayne County Road Commission and for 16 years prior to that he handled general publicity and later highway promotion for the Portland Cement Association.

## "Concrete" Editor Resigns

NORMAN M. STINEMAN has resigned from the position of editor of the magazine *Concrete*, to accept appointment as senior engineer in one of the divisions of the War Production Board in Washington. Mr. Stineman had been editor of *Concrete* for 13 years.

## New Superintendents

HAROLD L. LUCAS, chief chemist, Colorado Portland Cement Co., Portland, Colorado, has been appointed acting superintendent, replacing M. F. Fleming, who passed away recently.

•

CHARLES S. DINGLEMEN has been appointed superintendent of the magnesia plant of Warner Co. He is well equipped for this post as he was supervising engineer for United Engineers and Contractors, Inc., builders of the plant, and was on the job from the time the plant was in blueprint form.

## In Service

WILLIAM PORTER WITHEROW, JR., president of the Cemenstone Co., Pittsburgh, Penn., has been accepted as an officer candidate in the Marine Corps, and is now in training.

## New Editor of "Concrete"

JOHN W. SHAVER, who for the past seven years has been associated with the Advertising and Publications Bureau of the Portland Cement Association, is the new editor of *Concrete*. Mr. Shaver has had wide reportorial and editorial experience and a long-time acquaintance with the entire construction industry. After graduating from the University of Oregon in 1914 he taught high school mathematics and science for a year before joining the staff of the *Portland Oregonian*, where he remained until the declaration of World War I, when he promptly enlisted with the 18th Engineers. After the war he joined the *Engineering News-Record* in New York and remained on the editorial staff until 1928, when he was sent to Chicago as managing editor of the newly acquired McGraw-Hill paper, *Factory and Industrial Management*. In 1936 Mr. Shaver joined the Portland Cement Association and was soon made editor of *Concrete Highways and Public Improvements Magazine* and took over the major portion of the technical publicity prepared by the Association. Three years ago he brought out the first issue of *Soil-Cement News* which he has edited since then.

## Director of N.C.S.A.

WILSON P. FOSS, JR., chairman of the board of the New York Trap Rock Corp., New York, N. Y., has been elected a director of the National Crushed Stone Association in place of Stirling Tomkins.

## Safety Engineer

RICHARD B. STILES, formerly of the sales department of Warner Co., Philadelphia, Penn., and more recently Manpower Procurement Officer, has been appointed safety engineer, taking the place of Jim Estes, now a Lieutenant in the Marines.

## Chief Engineer of Permanente

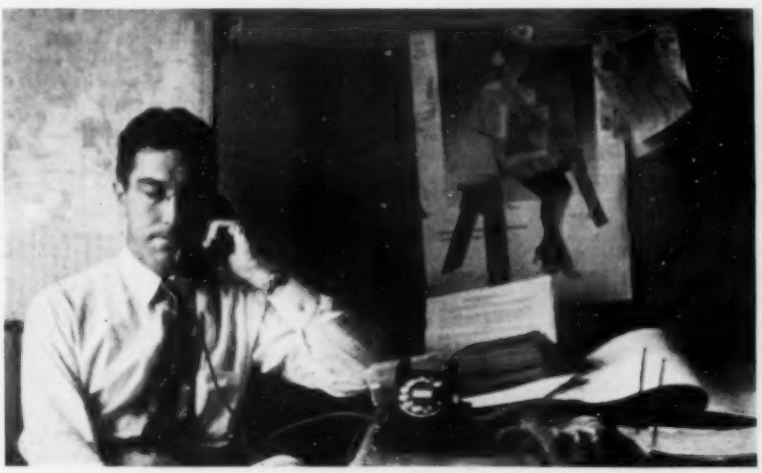
W. R. ABERCROMBIE, formerly engineer at the Permanente Metals Corp. and Henry J. Kaiser Engineering and Development Division, has been made chief engineer of the Permanente Cement Co., Los Altos, Calif. Mr. Abercrombie has had many years of experience in the cement industry and prior to his affiliations with the Kaiser interests had served in various capacities with the California Portland Cement Co., Atlas Portland Cement Co., and the Warrior Portland Cement Co.



W. R. Abercrombie

## Heads Ohio Ready Mix

WM. F. KERN, JR., Columbus Builders' Supply Co., Columbus, Ohio, was elected president of the Ohio Ready Mixed Concrete Association at its annual meeting, Columbus, June 24. Other officers elected are vice-president, Julius Warner, Cincinnati, Ohio; treasurer (reëlection) Stephen Stepanian, Columbus, and secretary, Claude L. Clark.



Wm. F. Kern, Jr.




## Mirror Saves Time

AT THE I. M. Luddington's Sons ready mixed concrete plant the office is located in the plant itself but



Mirror gives view of loading spouts from ready mix concrete plant office

it is so situated that those in the office could not ordinarily see what the conditions were at the loading spouts were it not for a large mirror mounted alongside the road. This scheme is used in many plants but is still a time and labor saver.

## Concrete Mixer Safety Guards

AT THE JOURDAN CONCRETE PIPE CO., Fresno, Calif., three concrete mixers are used; two for pipe and one for "Pumitile" a concrete masonry construction unit made from pumice.

All the mixers are about ¼-cu. yd. capacity and are set flush with the floor of the working space. By means of a hand lever a gate in the bottom can be opened and the mix discharged to chain conveyors serving the concrete pipe and concrete block machines. The mixers operate by means of paddles fixed to a horizontal shaft that runs through the drum.



Screen guard over concrete mixer located below ground level. Also note screen guard over drive belt pulley

As a safety precaution the tops of the mixers are covered with a heavy screen with about 4-in. openings. The operator can dump his aggregate and cement through this grid without endangering himself.

The illustration will give a good idea of the entire assembly.

## Blasting Protection

A SOUTHERN cement plant uses a series of belt conveyors to deliver the limestone and clay to its plant, a distance of over 6000 ft. The crushing plant has been moved down on the floor of the new quarry so that blasting operations are carried on very close to the take-off point of the conveyor system.

Most of the belt conveyors are protected from the weather by a simple, low-head, frame structure that is covered with corrugated iron but at the quarry end, heavier protecting members are necessary. Here the conveyor passes through a shallow cut so all that was necessary was to place inclined stulls across this cut and board them over as shown in the illustration.

## Increasing Stockpile Capacity

AT THE FAIR OAKS PLANT of Pacific Coast Aggregates, Inc., near Sacramento, Calif., large stockpiles of



Old rail and boards serve as wall to confine stockpile

minus 2½-in. materials are kept on hand for winter operations. For during that period of time the high waters of the American river makes it impracticable to operate in the pit along the river's bank.

The stockpile is built up by an in-



Heavy timber roof over conveyor provides protection against falling rocks from blasting

clined belt conveyor and a Link-Belt tripper. For reclaiming a belt conveyor passes through a tunnel under the stockpile and the belt is served by six chutes.

One edge of the stockpile is kept from spreading itself undesirably over the surrounding "toe" area by means of a retaining wall made from short, and otherwise useless pieces of steel rail. Planking rests against the upright members. The boards can be carried up to about five feet if desired. It makes a neat and inexpensive method of keeping a stockpile within bounds and with a considerable increase in its total capacity.

## Concrete Block Tester

JOURDAN CONCRETE PIPE CO., Fresno, Calif., is manufacturing a light weight concrete masonry unit under the trade mark of Pumitile. It is made from pumicite which is se-



**Test panel made of Pumitile units to demonstrate high-insulation and fire-resistant qualities of this masonry unit**

cured a short distance from Fresno. The construction unit has many qualifications to recommend itself. It is light in color, light-weight, can be nailed and has high insulation and fire resisting qualities.

To demonstrate the latter two qualifications the company has erected in the yard a test panel made of the pumitile. A flame of intense heat can be directed against the panel.

On tests made in this manner it has been demonstrated that the material has a high insulation value and is fire-resistant. The material passes all the building code requirements for Fresno and California.

Such demonstrations can be operated on a scientific basis with pyrometer reading and what not, but for a sales argument the mere fact that the company is willing to show the skeptic could make the sale.

## Take Welders to the Job

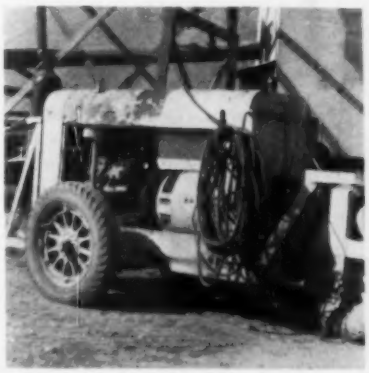
IN CALIFORNIA, a large sand and gravel plant maintains a well-equipped shop for repairs. A large



**Gasoline-driven electric welder mounted on three-wheel truck has platform at the rear to carry acetylene tanks to remote locations**

hydraulic press is available to press out pins and bushings on the many Caterpillar crawler assembles. Welding and hard-surfacing also play a large part in the method of repair. There is available acetylene and oxygen piped from a centrally located point to the repair shop and to various places about the operation.

Supplementing the permanent acetylene welding system is a gaso-



**Electrically-driven welder mounted on three-wheel truck is primarily for use in the shop or close-by points where power is available**

line driven electric welding outfit with a platform on its rear where cylinders of oxygen and acetylene can be carried to more remote jobs. A second G.E. electric welder, electrically driven is also available. It is a three-wheeled, rubber-tired rig. Both outfits must be towed to place of use.

## Portable Air Compressor

A TRUCK-MOUNTED AIR COMPRESSOR has proved to be a practical way to supply air for jack-hammers in the quarry of Lynn Sand and Stone Co., Swampscott, Mass. For several years, the company has operated a 320-cu. ft. Gardner-Denver compressor driven by a Caterpillar 13000 Diesel engine and mounted on a Mack truck.

Four air valves control four rubber air lines, up to 50-ft. length, to the drills. According to the quarry operators, this arrangement has proved a convenient way to drill, it has eliminated the need for long lines



**Truck-mounted compressor in quarry reduces length of hose lines**

scattered all over the quarry and reduces much of the pressure drop that was lost through long air lines.

## How Many Yards?

By W. F. SCHAPHORST, M.E.

VERY OFTEN the number of cubic yards of sand, gravel, etc., that will be required for a given job is desired quickly.

This chart will give the answer to nearly any such problem regardless of the depth, width, or length. The depth, column A, is given in inches, with the width, column B, and the length, column D, is given in feet.

Simply run a zig zag line across the chart as indicated by the dotted lines and the number of cubic yards is instantly given in column E.

For example, the dotted lines drawn across the chart show that if we want the depth of gravel to be 6 in. (column A) by 3 ft. wide (column B), and 1800 ft. long (column D), the number of cubic yards, column E, will be found to be exactly 100.

Merely run a straight line through the 6, column A, and the 3, column B, and locate the intersection in column C. Then from that point of intersection run through the 1800, column D, with another straight line, and the intersection with column E gives the answer as 100 cubic yards.

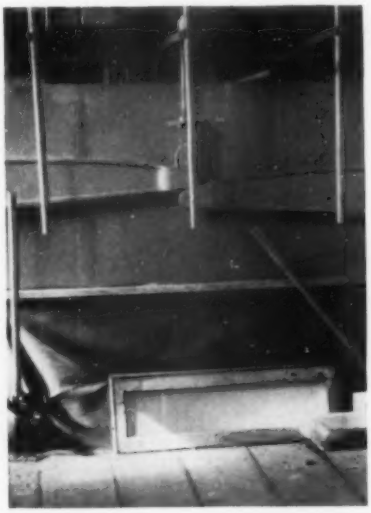
But that isn't all. The chart will also give the amount of yardage in much greater depths. Thus if the depth should be 60 inches instead of 6 the same dotted line will give the answer as 1000 cubic yards instead of 100. That is, when a digit is added to column A a digit must also be added in column E. Likewise if a digit is added in column B a digit must be added in column E.

Thus the same dotted line would show that for an excavation 60 in. deep by 3 ft. wide and 1800 ft. long, the number of cubic yards of gravel or sand taken out would be 1000. Or, again, if the depth is 6 in., and the width 300 ft. instead of 3 ft., and the length 1800 ft. you will have to add *two* digits in column E because two digits were added to column B thereby giving us 10,000 cubic yards in column E as the correct answer.

It is therefore evident that this chart will easily take care of almost any rectangular plot of ground, and it will give results that are surprisingly accurate.

## Glass Skirt Keeps Out Cold

THE OPERATOR of a ready mix plant, or any plant where weighed aggregates are dumped to a truck below, often has just a hole in the floor so he can see the position of the truck below. During the cold winter months this hole is just another of the usually many places where cold air can come in, making the operator's work uncomfortable. However, at this ready mix plant a heavy canvas skirt has been placed around the bottom of the weighing hopper so as to allow free movement of the scales and yet to keep out the cold. A piece of plate glass has been mounted in the skirt as shown in the illustration so the operator can see the truck he is loading.



**Canvas skirt around weighing hopper keeps out cold; plate glass window permits ready mix batcher operator to see trucks below**

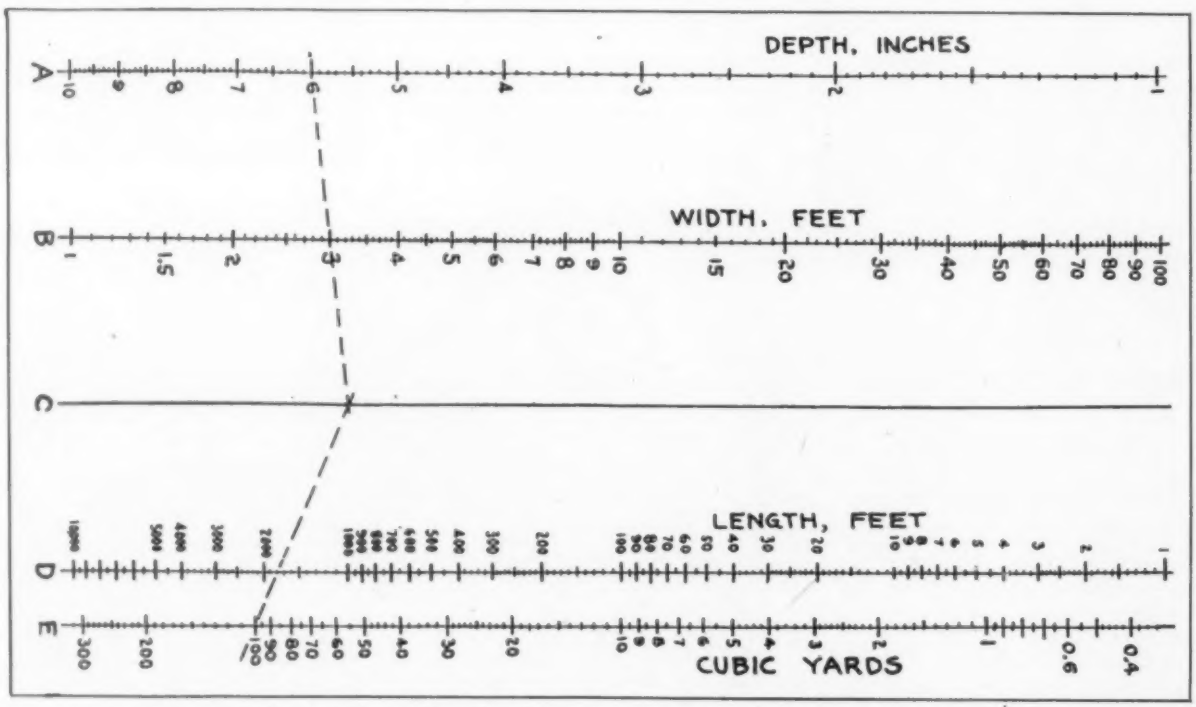



**Chart to quickly determine number of cubic yards of sand and gravel required for a particular job**



# PRIZE OFFER FOR Maintenance HINTS and HELPS For Publication in ROCK PRODUCTS

## WAR

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*Requires* RESOURCEFULNESS

*Requires* CONSERVATION

## In the Use of Men Material and Equipment

## PRIZES

**One $100 War Savings Bond —First Prize**
**Two $50 War Savings Bonds—Two Next Best**
**Two $25 War Savings Bonds—Two Next Best**
**Five $10 in War Savings Stamps—Five Next Best**

**Space rates with a minimum of $5 each will be paid for all other Usable Hints and Helps accepted by the Editors.**

### RULES

1. Any reader of ROCK PRODUCTS actually engaged in a rock products operation may offer a contribution.
2. The manuscript may be typewritten or written long-hand, pencil or ink; spelling or grammar makes no difference—it is the usefulness or applicability of the idea or device as described that counts.
3. The manuscript should be accompanied by an illustration if possible. This may be a snapshot photo, pencil sketch, blueprint, etc.
4. The subject selected to be described may be any part of the operation—any phase of the production process. It may be on maintenance or repair of a piece of equipment or machinery; it may be a money-saving or maintenance idea on lubrication; an accident-prevention idea; a cost-keeping idea; a way of meeting labor or public relations problems—any subject made live by war conditions, or brought about largely by Ingenuity, Resourcefulness and Conservation as a result of war necessities.
5. In case of a tie for any of the prizes, duplicate prizes will be awarded to the persons tying.

### JUDGES

The judges will be two prominent producers and the Editor-in-Chief of ROCK PRODUCTS.

*Address all contributions and communications to*

**War Ingenuity Contest**
**ROCK PRODUCTS**
**309 West Jackson Blvd.**
**Chicago, Ill.**

**The contest is now open and closes on December 15, 1943. Prize winning HINTS and HELPS will be published in the January, 1944, issue and following issues.**

## Act Now!




## Pacific Coast Aggregates Buys San Jose Plant

CENTRAL SUPPLY CO., San Jose, Calif., has sold its plant and local business to Pacific Coast Aggregates, Inc. Other holdings of Pacific Coast Aggregates in the San Jose region include a plant at Campbell, one in Coyote, and one on Downer avenue in San Jose. The local San Jose plant recently taken over will be in charge of the following: Phil Patnude, building material and warehouse; Robert Helstrom, sand, gravel and ready mixed concrete; with Ed Riley as office manager. Jack Cassidy will have charge of the maintenance and mechanical operation of all the corporation's plants. The announcement was made by E. J. Goodpastor, vice-president and general manager of Pacific Coast Aggregates.

## Cowell Dust Case

COWELL CEMENT CO., San Francisco, Calif., is again faced with litigation on charges that dust from kilns is a nuisance and excessive. An injunction obtained by Contra Costa county some time ago set a maximum of 13.5 tons per day of dust which might be emitted by the kilns. County attorneys contended that this maximum had been exceeded and requested the Redwood City Superior Court to have the plant closed as a public nuisance. Cowell cement attorneys contend, however, that the dust is neither excessive nor a nuisance, that a Superior court has no jurisdiction over a plant engaged in defense work, and that once an injunction is granted against a firm the case is closed.

## Form Mica Concern

THE CATAWBA MINERAL CORPORATION, Charlotte, N. C., recently formed, has taken over the assets and operations of the B. and S. Mining Co., in Lincoln, Catawba, Cleveland, and Wilkes counties, according to John H. Booth, one of the incorporators. Associated with Mr. Booth are Ned H. Sigmon, co-owner with the former, of the B. and S. Company, and R. Hoyle Smathers, Charlotte attorney. Considerable quantities of kaolin, quartz, beryl and feldspar are being mined, but the principal activity is the mining of mica which is being sold to the federal government at the rate of $5 a pound.

## Fined On Trade Restraint Charge

THE IDEAL CEMENT CO., Denver, Colo., was recently fined $2000 on each of two counts in the U. S. District Court after entering a plea of nolo contendere to charges of conspiracy to restrain trade. Charges against Harry O. Warner, company vice-president, were dismissed. The cement company was the last to plead of 93 defendants indicted by a federal grand jury in April, 1941. The indictment charged the Mountain States Lumber Association and regional lumber and cement dealers with restraining and monopolizing trade on their products.

## Form Company to Produce Agricultural Limestone

LOUISIANA LIMESTONE CO., Shreveport, La., is the name of the new company organized to set up an agricultural limestone plant at Rayburn dome, 16 miles northwest of Jonesboro, La. Governor Jones of Louisiana has been actively promoting the project. W. Harry Johnson, president of the Tri-State Transit Co., is the principal backer of the company, and Horace Long, engineer with the Tri-State Company, will be general manager.

## Fire at Sand Plant

CARSON SAND CO. reported that a fire at its Mt. Eagle plant near Bellefonte, Penn., destroyed the main building, all equipment, and two trucks. All machinery, grinders, and pulverizers used in making four grades of sand was lost in the fire. Dynamite and dynamite caps stored in the building exploded and caused considerable damage, according to a local news report. The upper part of the building was constructed of wood while the lower part was of concrete. The fire, of unknown origin, was burning on the roof when discovered.

## New Offices

THE Gallagher Brothers Sand & Gravel Corporation has leased new offices, 39 Broadway, New York City.

## Penalties for Resisting WLB Orders

COMPANIES and unions which defy the War Labor Board orders are to be subjected to the following possible penalties, according to a report of the *Chicago Tribune* commenting on powers delegated to the Director of Economic Stabilization by President Roosevelt:

1. Cancellation of draft deferments or employment privileges, or both, of strikers in war plants.
2. The withholding of priorities, war contracts, fuel or transportation services from noncomplying employers.
3. Government seizure of a plant in extreme cases.
4. The withholding of union dues and the cancellation of other union benefits.

Among the companies mentioned as having refused to comply with W.L.B. orders is the United States Gypsum Co., Chicago, Ill.

## County Competition

A PITTSBURG, KANS., news report states that a crushing plant will be set up at a quarry site near the county farm to make agricultural limestone, according to A. C. Starr, chairman of the Board of County Commissioners. The farmers will get their liming material at the cost of production if they haul it away in their own trucks. Apparently some difficulty has developed in getting a crusher.

## Stone and Gravel Awards

R. M. MURPHY CONSTRUCTION CO., Black Creek, and Kenneth Hodgins, Hortonville, Wis., were awarded contracts for gravel and crushed stone by the county board meeting in Appleton, Wis. R. M. Murphy was given a contract to furnish 2400 cu. yd. of crushed gravel for the town of Bovina at $1.20 per cubic yard and for 1300 cu. yd. of crushed stone for the town of Black Creek at $1.58 per yd. Hodgins received a contract for 1300 cu. yd. of crushed stone for the town of Center at $1.49 per cu. yd. Bids on stone for the towns of Seymour and Oneida will be considered later.

## Rejects Memphis Gravel Plant

MEMPHIS STONE & GRAVEL CO., Memphis, Tenn., had its application for a permit to erect a gravel plant, shop and office on Mt. Moriah Road near Park Road rejected by the Shelby County Board of Adjustment.

## Cement Freight Rate Suit

NORTHERN PACIFIC RAILROAD, in a suit brought before the Minnesota federal district court, has claimed several million dollars is due the railroad as the difference between so-called low dam rates and land grant rates for hauling cement used to build Grand Coulee dam, and the government is making counterclaims alleging overcharges and costs the railroad should have borne. R. F. Blanks, Bureau of Reclamation engineer in charge of analysis and abstracting of bids, gave testimony that 13c and 17c rates specified in a contract between the Bureau and the railroad were taken into account when the bids of cement mills were analyzed. On cross-examination by the railroad attorney, Mr. Blanks said that rates different from those in the special contract were contemplated, but added he understood the special rates were the maximum and if other rates were negotiated they would be lower.

## Sue on Sand Contract

THE GRIMMETT CONSTRUCTION CO., Oklahoma City, Okla., recently filed suit in the federal district court at Muskogee, Okla., to collect $106,232 damages from Brown & Root, Inc., and W. S. Bellows, Houston, Tex., contractors, for alleged misrepresentation of sand pits from which the Grimmett company was to produce sand for concrete construction at a Naval ammunition depot.

In the suit, the plaintiffs allege that the company was induced to enter a contract for production of 300,000 cu. yd. of sand for $1.28 per cu. yd. by representations of the defendants that the pits from which the sand was to be dug were free of boulders and had a comparatively small amount of overburden. The plaintiff found that this was not true and informed the defendants, according to the petition, but was requested to continue the work. Only $42,888 was paid to the plaintiff company, but the Grimmett company states that $149,121 was spent to get out the material due to the large number of boulders and the limited quantity of sand available.

## Liming Materials Consumption on Farms in 1942

NATIONAL LIME ASSOCIATION has compiled the following tabluation of data (tonnage basis) on liming materials consumption on farms in the United States during 1942:

APPROXIMATE CONSUMPTION OF LIMING MATERIALS ON UNITED STATES FARMS DURING 1942

| State | Ground Limestone | Limestone Screenings and Meal | Burned Lime | Hydrated Lime | Marl | Miscellaneous Materials (6) | Total Liming Materials | Effective Lime Oxides (7) | Lbs. of Lime Oxides per Acre of Crop Land‡ | Lbs. of Lime Oxides per Acre of Crop Land and Pasture‡ |
|---|---|---|---|---|---|---|---|---|---|---|
| Maine (5) | 60,000 | ..... | ..... | 5,000 | ..... | ..... | 65,000 | 33,500 | 53.0 | 42.2 |
| New Hampshire (1 and 5) | 27,000 | ..... | ..... | 50 | 170 | 100 | 27,320 | 13,670 | 66.0 | 46.3 |
| Vermont (1 and 5) | 89,692 | ..... | 325 | 2,400 | 500 | ..... | 92,917 | 47,052 | 87.4 | 64.0 |
| Massachusetts (4 and 5) | 56,000 | ..... | 197 | 3,200 | ..... | ..... | 59,397 | 30,407 | 109.0 | 77.2 |
| Rhode Island (5) | 7,941 | ..... | ..... | 1,112 | ..... | ..... | 9,053 | 4,748 | 153.2 | 102.1 |
| Connecticut (1 and 5) | 57,133 | ..... | ..... | 1,787 | ..... | ..... | 58,920 | 29,817 | 140.0 | 93.0 |
| NEW ENGLAND | 297,766 | ..... | 522 | 13,549 | 670 | 100 | 312,607 | 159,196 | 84.0 | 61.5 |
| New York (4) | 561,084 | ..... | 394 | 15,949 | 1,223 | ..... | 578,650 | 292,652 | 78.5 | 57.2 |
| New Jersey (4) | 72,998 | ..... | 2,105 | 35,835 | ..... | 1,814 | 112,752 | 64,280 | 134.2 | 111.1 |
| Pennsylvania (4) | 528,183 | ..... | 84,407* | 62,635 | 527 | 8,310 | 684,062 | 384,100 | 107.0 | 83.5 |
| Delaware (4) | 3,778 | ..... | 4,736 | 7,312 | ..... | 2,055 | 17,881 | 12,060 | 50.0 | 42.3 |
| Maryland (4) | 51,337 | ..... | 32,480 | 37,692 | 2,453 | 17,142 | 141,104 | 89,457 | 90.2 | 69.2 |
| West Virginia (1 and 5) | ——→ | 276,888 | 10,000* | ..... | 100 | ..... | 286,988 | 124,843 | 137.0 | 65.0 |
| MID-ATLANTIC | 1,217,380 | 276,888 | 134,122 | 159,423 | 4,303 | 29,321 | 1,821,437 | 967,393 | 96.1 | 70.0 |
| Ohio (4) | 290,389 | 1,097,290 | ..... | 11,058 | ..... | 21,322 | 1,420,059 | 624,458 | 115.4 | 80.0 |
| Indiana (1 and 5) | ——→ | 1,216,534 | ..... | ..... | 50,000 | 10,000 | 1,276,534 | 533,444 | 97.5 | 73.0 |
| Illinois (3 and 4) | ——→ | 3,773,000 | ..... | ..... | ..... | ..... | 3,773,000 | 1,584,660 | 157.0 | 126.1 |
| Kentucky (3) | ——→ | 1,300,387 | 2,767 | ..... | 166,650 | ..... | 1,469,804 | 606,842 | 186.5 | 92.0 |
| Michigan (2) | 3,743 | 155,085 | ..... | 3,435 | 370,000 | 150,000 | 682,263 | 273,912 | 61.0 | 46.0 |
| Wisconsin (3) | ——→ | 1,287,571 | ..... | ..... | 53,899 | 119,910 | 1,461,380 | 619,599 | 121.0 | 95.0 |
| Minnesota (4) | ——→ | 235,661 | ..... | ..... | 51,236 | 549 | 287,446 | 117,185 | 12.0 | 10.2 |
| Iowa (1 and 5) | ——→ | 1,200,000 | ..... | ..... | ..... | ..... | 1,200,000 | 504,000 | 48.0 | 37.0 |
| Kansas (1 and 5) | ——→ | 110,000 | ..... | ..... | ..... | ..... | 110,000 | 46,200 | 3.3 | 3.0 |
| Missouri (3) | ——→ | 1,694,012 | ..... | ..... | ..... | ..... | 1,694,012 | 711,485 | 103.4 | 62.0 |
| MID-WESTERN | 294,132 | 12,069,540 | 2,767 | 14,493 | 691,785 | 301,781 | 13,374,498 | 5,621,784 | 75.0 | 56.0 |
| Virginia (4) | 635,200 | 12,272 | 24,171 | 7,259 | 20,056 | 25,332 | 724,290 | 368,066 | 154.3 | 92.4 |
| North Carolina (4) | 384,484 | ..... | 935 | 5,243 | ..... | 16,731 | 407,393 | 205,072 | 57.0 | 49.0 |
| South Carolina (4) | 198,709 | ..... | ..... | 1,004 | 4,500 | ..... | 204,213 | 101,632 | 41.3 | 37.0 |
| Georgia (4) | 115,783 | ..... | 3,349 | 5 | ..... | ..... | 119,137 | 60,742 | 12.0 | 10.4 |
| Florida (4) | 108,126 | 370 | 24 | 125 | ..... | ..... | 108,645 | 54,326 | 49.0 | 38.0 |
| Tennessee (1 and 5) | ——→ | 489,269 | 1,000 | 2,000 | 2,000 | 99,150 | 593,419 | 258,018 | 68.0 | 46.2 |
| Alabama (4) | 57,222 | 17,400 | ..... | 10 | ..... | 495 | 75,127 | 36,173 | 8.8 | 7.0 |
| Mississippi (4) | 26,261 | ..... | ..... | 9 | ..... | 1,076 | 27,346 | 13,674 | 3.4 | 3.0 |
| Louisiana (4) | 18,267 | ..... | ..... | 9 | ..... | 534 | 18,810 | 9,406 | 4.1 | 3.1 |
| Oklahoma (4) | ——→ | 7,574 | ..... | 100 | ..... | ..... | 7,674 | 3,251 | .4 | .3 |
| Arkansas (4) | 26,195 | 10,474 | ..... | ..... | ..... | 500 | 37,169 | 17,746 | 5.0 | 3.5 |
| Texas (4) | ——→ | 1,990 | ..... | ..... | ..... | 337 | 2,327 | 1,004 | .06 | .04 |
| SOUTHERN | 1,570,247† | 539,349 | 29,479 | 15,764 | 26,556 | 144,155 | 2,325,550 | 1,129,113 | 20.0 | 15.0 |
| California (4) | 1,222 | ..... | 7,000 | 1,044 | ..... | 3,365 | 12,631 | 8,974 | 2.1 | 1.4 |
| Oregon (1 and 5) | 25,000 | ..... | ..... | ..... | ..... | 1,500 | 26,500 | 13,250 | 7.0 | 5.0 |
| Washington (4 and 5) | 9,830 | 1,000 | 200 | 500 | 550 | 300 | 12,380 | 6,198 | 2.0 | 2.0 |
| WESTERN | 36,052 | 1,000 | 7,200 | 1,544 | 550 | 5,165 | 51,511 | 28,421 | 3.0 | 2.2 |
| GRAND TOTALS | 3,415,577 | 12,886,777 | 174,090 | 204,773 | 723,864 | 480,522 | 17,885,603 | 7,905,907 | | |

States Not Listed Use Little or No Liming Material

(1) Figures based on Agricultural Conservation Program records. (2) Figures partially estimated and partially obtained by county agent or producer survey. (3) Figures obtained by county agent survey. (4) Figures obtained by producer survey. (5) Figures estimated. (6) Consists of ground shells, by-product lime, etc. (7) Computed on the following basis: 50 percent for ground limestone, miscellaneous materials, and commercial marl; 35 percent for farm-dug marl; 42 percent for limestone screenings and meal; 70 per cent for hydrated lime; and 85 percent for burned lime. *Includes an estimated 10,000 tons for Pennsylvania and 5,000 tons for West Virginia of burned lime used and distributed by small local producers. †Includes most of the ground limestone and dolomite used in fertilizer mixtures. ——→ Ground limestone included in figure for limestone screenings and meal. ‡Crop land: crop land harvested, crop failure, idle or fallow. Pasture: plowable pasture (1941 census).




## A.-C. Welder

HARNISCHFEGER CORPORATION, Milwaukee, Wis., has announced the addition of a complete line of industrial




**A.-C. welders unit, which range in type from 20 to 1200 amp.**

a.-c. arc welders to its line of d.-c. machines.

Engineered and built for industrial service, these machines are being made in 7 Heavy Duty and 4 Intermittent Duty models with a range of capacities for handling production welding under continuous operation. The new line features the recently adopted "WSR" (Welding Service Range) ratings which show the actual minimum to maximum output of usable welding current. Specific "WSR" ratings of Heavy Duty models are: 50 to 270 amps., 60 to 375, 90 to 500, 100 to 625, 125 to 750, 150 to 900, and 200 to 1200—of Intermittent Duty Models: 20 to 185 amps, 20 to 235, 20 to 285, and 20 to 335. Setting and control of current throughout complete welding service range involves one simple, easy-to-operate adjustment.

## Heavy-Duty Swivel Caster

H. L. PITCHER Co., sales agency for the products of Rose Manufacturing Co., Detroit, Mich., has announced a new heavy duty, all-steel swivel caster.

Featured in its design are a drop forged base plate with king pin in-



**Cut-away view of heavy-duty swivel caster**

tegral. Around the king pin is a Timken thrust bearing. On the axle is a hardened non-turning spanner bushing and a Hyatt roll wheel bearing. The caster swivels on ⅜-in. chrome steel ball bearings that ride in removable steel races.

## Mulitple Lubricating System

THE FARVAL CORPORATION, Cleveland, Ohio, has developed an improved method of providing positive lubrication to a group of bearings from a central distributing block, known as the Multival system.

Like other Farval equipment, this system delivers lubricant to individual bearings under pressure. With



**Providing lubrication to a group of bearings from a central distributing block**

this system, however, oil or grease is supplied to the multiple valve blocks by means of a manual or power-operated portable gun. By making a single connection, the operator delivers an exact measured charge of lubricant to as many as 10 bearings at a time. Each bearing receives the correct amount, regardless of its location or condition.

## Removing Broken Pipe and Bolts

REPS TOOL CO., INC., New York, N. Y., has patented and is now distributing double-purpose extractors of forged tool steel with a heavy square shank followed by a sharply tapered, short, reverse thread ending in a square reaming end. As shown in the illustrations, by simply inserting the tapered end in the stub of pipe, tube, or drilled screw or bolt, without any hammering or other preparatory steps, a powerful four-point grip is obtained on the object to be removed.

The built-in, square reamer automatically removes burrs, thus eliminating interference with the extractor's bite. Continued increase in pressure of a wrench on the squared shank pulls the broken piece back outwards on its threads.

Ten Cadmium plated extractors make up the set, and cover the entire range of pipe from ⅛-in. to 2-in., and bolts or screws from ⅜ to 3½-in.





**Above: Extractor and piece of broken pipe after removal from a boiler connection. Below: Removing broken follow plate bolt from 32-in. intermediate piston**

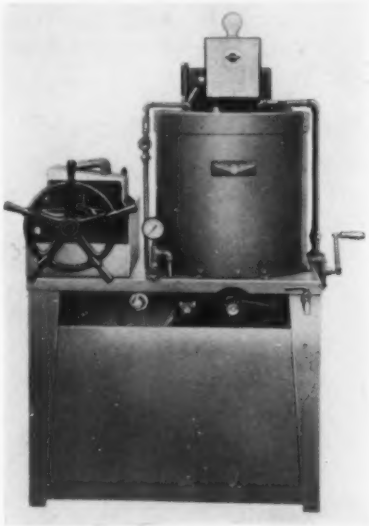
## Oil Reclaimer

YOUNGSTOWN MILLER CO., Sandusky, Ohio, has designed a small capacity lubricating oil reclaimer for small plants and concerns operating their own fleet of trucks and motor cars. In addition to reclaiming lubricating oils of the motor fleet, this reclaimer can usually handle a limited quantity of oils drained from equipment used in the plant or manufacturing processes of these companies.

It is claimed that this unit, Model A-8, has a capacity for purifying 8 gal. of dirty oil in 70 to 90 min., with a total annual capacity to handle 2500 gal. of waste oil per year when operated only once a day.

This machine has a two-stage filter press, is semi-automatic, operating under thermostatic control, and utilizes common refinery earths available on the open market. The man operating the machine can do so incident to his regular work.

For handling larger quantities of lubricating or hydraulic oils, this company builds units in seven other sizes. All models are designed to restore used oils to substantially the same values of fire, flash, viscosity, color, neutralization number, and precipitation number as the new parent oil.



**Small oil reclaimer purifies 8 gal. of waste oil in 70 to 90 minutes**

## Portable Dust Collector

BARGER SHEET METAL CO., Cleveland, Ohio, has brought out a portable dust collector called the Safe-Aire. This machine is designed to provide a simple, flexible dust collection system. It can be used to supplement larger, permanent dust-control systems or to serve in place of such systems when necessary.

Its basic use is to collect dust from a single grinder or other dust-creating machine, separate the dust from the air, and blow the clean air directly back into the room. For example, it will normally handle the dust from two 9-in. grinding wheels, whether they are mounted together or separately, and it can be attached to two separate machines.

The dust collector has a capacity of 600 c.f.m., and one of its most important advantages is that it does not exhaust any air from the room, but returns it clean and slightly warmer than before. This saving of heat in the winter is an important factor.



**Dust collector comprises cyclone and spun glass filter**

It is an inexpensive machine to operate and it is powered by a ¼-hp. motor running a blower at 3400 r.p.m. The machine is 36-in. high, 24-in. wide, and 15-in. deep. Dust-laden air is drawn into a miniature cyclone at high speed which precipitates the heavier dust into a hopper and throws the lighter dust into a filter chamber. The air is then forced through a spun glass filter directly back into the room.

## Vertical, Hollow-Shaft Explosion-Proof Motors

FAIRBANKS, MORSE & CO., Chicago, Ill., is now offering a line of vertical, hollow-shaft, explosion-proof motors for operation in Underwriters' Class I, Group D hazardous gas locations. Although these motors are designed primarily for pumps handling large quantities of volatile materials, such as high octane aviation gasoline, there are many industrial applications arising requiring motors designed to prevent explosions and fires.



**Vertical motor designed for pumps handling volatile materials**

## Paper Sweat Bands

ALDINE PAPER CO., New York, N. Y., has devised a sweatband for workmen which is said to be very effective in instantly absorbing sweat from the forehead. The band is known as Aldex.

Aldex itself and the cellulose fibre filler within the band absorbs perspiration immediately on contact.



**Absorbent sweatband which may be reused**

# Letters to the Editor

## Processing Sands

THE EDITOR: I wish to congratulate the editors of ROCK PRODUCTS for undertaking the preparation of the series of articles on processing sands to meet grading requirements. Sand grading has been like the weather in that it has been much talked about but had little done about it. Your series of articles should do much to stimulate constructive thinking.

The trend toward increased fines is more than a fad of the theorist. While there are many examples of the pendulum of practice swinging too far, it is nevertheless true that, intelligently controlled, the trend is in the right direction. Coöperation on the part of the producer is one of the best assurances of intelligent control.

The most difficult requirement is that for minus 100-mesh material. Frequently that size is not present in the deposit and, if present, is there only in the form of silt and clay. The retention of 4 or 5 percent minus 100-mesh in the form of silt and clay causes the sand to fail to meet many specifications for "deleterious" substances, among which the minus 200-mesh material is often classed. And if such a limitation is not in the specification, or is waived, the sand looks dirty—and often is dirty. The silt and clay frequently is a carrier of organic impurities in sufficient quantities to be deleterious. They are further objectionable because, in many types of concrete, they work to the surface and contribute to laitance.

The point of the preceding paragraph is to emphasize and modify the statement in the article that: "The 'fines' that purchasers want are firm sand grains and not 'silt,' clay or loam." The purchaser certainly does not want "muck" of unknown characteristics. Further, the producer should be cautious about adding "water-melon-patch" sand without examining it for impurities and without providing means for blending it uniformly. The specification writer, the purchaser and the producer should not overlook the fact that the use of fine granular admixtures may offer, in the case of many deposits, a more economical solution to the problem than the laborious introduction of minus 100-mesh material to the graded sand as furnished to the market. These three should also have prominently in mind that the need for fines is less for rich mixes than for lean mixes.

While I am probably anticipating future articles, I wish to point to another problem of sand grading. It is the problem of the "belly"—of the concentration of grains in one size bracket. Such concentrations lead to harshness and to what Weymouth calls particle interference. That problem is most difficult of control by present common plant practices. Further, the production of off-size waste material, which accompanies its solution, discourages attempts to solve it. It is a problem of equal importance to that of fines and a *part of the same problem*. At least some considerable part of the cry for fines may be accounted for by the desire to compensate for the harshness resulting from these all-too-common concentrations of grains of nearly the same size, which occur, for the most part, some place between the 50 and 16-mesh sizes. That is to say, a well-graded sand needs less of the minus 50 and 100-mesh material than a poorly graded one.

STANTON WALKER,
Director of Engineering,
National Sand and Gravel Association

## A.A.A. and Agricultural Lime Distribution

THE EDITOR: The June edition of ROCK PRODUCTS contains an extremely interesting article entitled "Getting the Agricultural Lime or Limestone on the Field." Unfortunately for the Agricultural Adjustment Agency, the article starts out by implying that my article in your April issue is to be taken as an indication that the A.A.A. is getting out of the limestone distribution picture and throwing the farmer back on his own resources.

If clarification is needed on this point, I should like to emphasize that A.A.A. considers it an obligation not only to continue its past efforts to get limestone to farmers, but to increase them many-fold, in order to overcome the problems confronting the producer and distributor. Upon the recommendation of this Agency, the War Food Administration will appoint a liming materials industry advisory committee in the very near future in order that there may be a channel through which the industry's problems may be brought to the attention of Federal agencies. In addition, A.A.A. county and State committees are constantly on the alert to bring their influence to bear locally in stimulating the movement of limestone to farms.

It is our hope that the agricultural limestone industry will avail itself of the assistance which the A.A.A. is eager to render. They may discuss their problems with the local A.A.A. people with the assurance that any action that needs to be taken in Washington will be referred to A.A.A. headquarters here at their request.

D. W. AITKEN,
Division of Special Programs, A.A.A.

## A.A.A. Lime for Farmers

AUTHORIZATION of immediate distribution of lime to farmers in the northeast region under the 1944 farm production program has been announced by the W.F.A.

Under this program farmers will be supplied lime, in lieu of A.A.A. payments, to increase wartime production. The early start on distribution will make it possible for the lime manufacturers to continue full-scale operations in the normally dull part of their production year. Indications are that this procedure will increase the total quantity of lime available in this region by approximately one-third above that of any preceding year.

## Anti-Strike Law Declared Constitutional

THE SMITH-CONNALLY ANTI-STRIKE LAW cleared its first legal hurdle August 18, when Judge F. P. Schoonmaker of the Federal District Court bench, overruled motions to quash indictments against 30 miners on the ground that the measure was unconstitutional.

The miners were indicted in July by a grand jury investigating wildcat strikes in southwestern Pennsylvania's soft coal fields during June and July. It was the first action under the act, passed June 25 over a presidential veto.

Judge Schoonmaker declared:

"The powers of the government known as war powers are almost without limit.

"We (the court) are of the opinion the act is a valid exercise of war powers and we therefore overrule the motions to quash the indictments.

"This country is involved in a very serious war and the necessary operation of coal mines must not be impeded."

By WALTER B. LENHART

# Span River with Belt Conveyors for Fontana Dam Aggregates

**Big T.V.A. power project employs rod mills to reduce crushed stone to fine aggregate. Other details for making and blending all sizes of aggregate**

As a part of the Tennessee Valley Authority war emergency program, construction of the Fontana Dam on the Little Tennessee River started early in 1942. This is the sixteenth power development and water control dam to be built as a part of the T.V.A. program. The dam will be 465 ft. high above the foundations and with the spillway will involve the pouring of almost 3,000,000 cu. yd. of concrete. This is the highest dam east of the Rockies, and from a power development standpoint is the second largest dam of the T.V.A. project, it being superseded in capacity by the Wilson dam near Muscle Shoals. To date (middle of July) 525,000 cu. yd. of concrete have been poured. About 200,000 cu. yd. of concrete are being poured per month. The dam will impound 1,450,000 acre-feet of water, of which 1,160,000 acre-feet will be controlled storage.

Fontana Dam is 65 miles southeast of Knoxville by road—35 miles air line. It is just over the Tennessee-North Carolina border, being located in North Carolina. It is reached from Knoxville by paved highways.

When completed, the project will develop 202,500 kw. from three generating units. The three units will have a capacity of 67,500 kw. each. The first unit is expected to go into operation during September, 1944, with the second unit about December, 1944. Installation of the third and last unit has been deferred. To date, T.V.A. has built, acquired, or is constructing 20 large hydro plants.



General view of the quarry site from the left side of the river. Primary crusher structure is to extreme right. Note blast-hole drills at work



Blasting down stone in the concrete aggregates quarry

For the production of the aggregates and sand needed for this project a plant of unusual design has been constructed. The production of sand by grinding crushed rock in a rod mill is fairly common practice but should be of interest to many producers who are shy the finer sizes of sand (minus 100-mesh) as it will indicate what can be done with this type of equipment.

### Rod-Mill Sand

One of the features of a rod mill is its high capacity and low maintenance costs. The cost per pound of rods consumed is materially less than for steel balls such as are used in standard ball milling practice. Ordinarily, for grinding in the extremely fine sizes, a rod mill is not to be recommended, that is where one desires to grind a high percentage through a 200-mesh screen. But for grinding 100 percent through a 10-mesh or a ¼-mesh it probably has no equal as a wet grinding unit.

At this plant there are two 9- x 12-ft. Allis-Chalmers rod mills driven by a single 800-hp. motor through V-belt drives. They each carry approximately a 75,000 lb. load of high carbon steel rods. The initial charge ranged from 2½-, 3- and 3½-in. diameter rods. Replacements are 3½-in. diameter rods. Alloy rods of chrome steel and a high-silicon rod also are used. Steel rods of this type wear down to small diameter and then break into small pieces so as to facilitate their discharge from the mill. These mills have an ultimate capacity of 115,000 lb. of rods. Rod consumption is estimated at 0.7 to 0.8 lb. per ton of sand produced. This will amount to 0.6 to 0.68 lb. per ton of feed which is probably a high estimate.

The liners and ends are of manganese steel. It is expected that two sets of liners will easily last for the total construction period of this dam which, on the basis of 200,000 cu. yd. poured per month with a total of 3,000,000 cu. yd., will mean a life of 7½ months per set of liners. At present capacity of the rod mill then, on this basis, each set of liners will produce close to 500,000 tons of sand. The feeder is a standard drum feeder. The liners are of the standard wave type.

The water content of the rod mill discharge product is regulated so as to give the desired grind. Too thick a pulp tends to give too much fines. At this plant the discharge is rather thin.

The feed to the rod mill is a blend of various stones from the crushing plant. It is primarily a rather hard quartzite containing around 80 percent silica. The material resembles graywacke. In the rod mill it breaks down to a sand that cannot be classed as excessively sharp, nor excessively rounded grain. It does make an easily workable concrete at the mixing plant and very satisfactory in that regard.

The average feed to the rod mill is as follows, based on a feed rate of 252.5 tons per hour for both mills: (Percentages indicate that retained)

| | |
|---|---|
| Plus 1½-in. | 1.1 percent |
| Plus ¾-in. | 12.8 percent |
| Plus ⅜-in. | 20.8 percent |
| Plus No. 4 | *17.2 percent |
| Plus No. 8 | 12.2 percent |
| Plus No. 14 | 10.5 percent |
| Plus No. 28 | 7.6 percent |
| Plus No. 48 | 5.3 percent |
| Plus No. 100 | 3.4 percent |
| Plus No. 200 | 2.3 percent |
| Minus No. 200 | 6.8 percent |

*¼-in.

The rod mill discharge for the same period of time had the following screen analysis:

| | |
|---|---|
| Plus No. 4 | 3.3 percent |
| Plus No. 8 | 11.8 percent |
| Plus No. 14 | 21.6 percent |
| Plus No. 28 | 20.6 percent |
| Plus No. 48 | 13.7 percent |
| Plus No. 100 | 8.0 percent |
| Plus No. 200 | 5.3 percent |
| Minus No. 200 | 15.7 percent |

In grinding most rocks a certain amount of slimes or fines will be produced which are lost in the subsequent processing. At this plant, the operators figure that 18 percent of the feed is lost as slimes or other fines that fail to collect in the sand classifying equipment that follow the rod mill. Incidentally, the rod mill operates in an open circuit, i. e., one pass through the mill with no provision made for return of oversize.

The rod mills discharge direct to a 16-ft. diameter x 5-ft. hydro-separator. This acts as a dewaterer for the two Dorr classifiers that receive the underflow from the hydroseparator. It also acts as a preliminary unit for getting rid of the slimes. The overflow from the separator goes to waste. The solids overflowing have the following screen analysis:

| | |
|---|---|
| Plus 48-mesh | 0.1 percent |
| Plus 100-mesh | 0.7 percent |
| Plus 200-mesh | 1.8 percent |
| *Minus 200-mesh | 2.1 percent |
| †Minus 200-mesh | 95.3 percent |
| | 100.0 percent |

*Dry pan.
†Wet pan.

The underflow splits and passes to a 5- x 30-ft. and a 7- x 30-ft. Dorr classifier. The rake classifiers deliver the sand to storage by a series of belt conveyors.

Overflow from these classifiers goes to waste. The solids in the overflow have the following screen analysis:

| | |
|---|---|
| Plus 28-mesh | 0.2 percent |
| Plus 48-mesh | 0.4 percent |
| Plus 100-mesh | 4.9 percent |
| Plus 200-mesh | 14.2 percent |
| *Minus 200-mesh | 10.0 percent |
| †Minus 200-mesh | 70.3 percent |

*Dry pan.
†Wet pan.



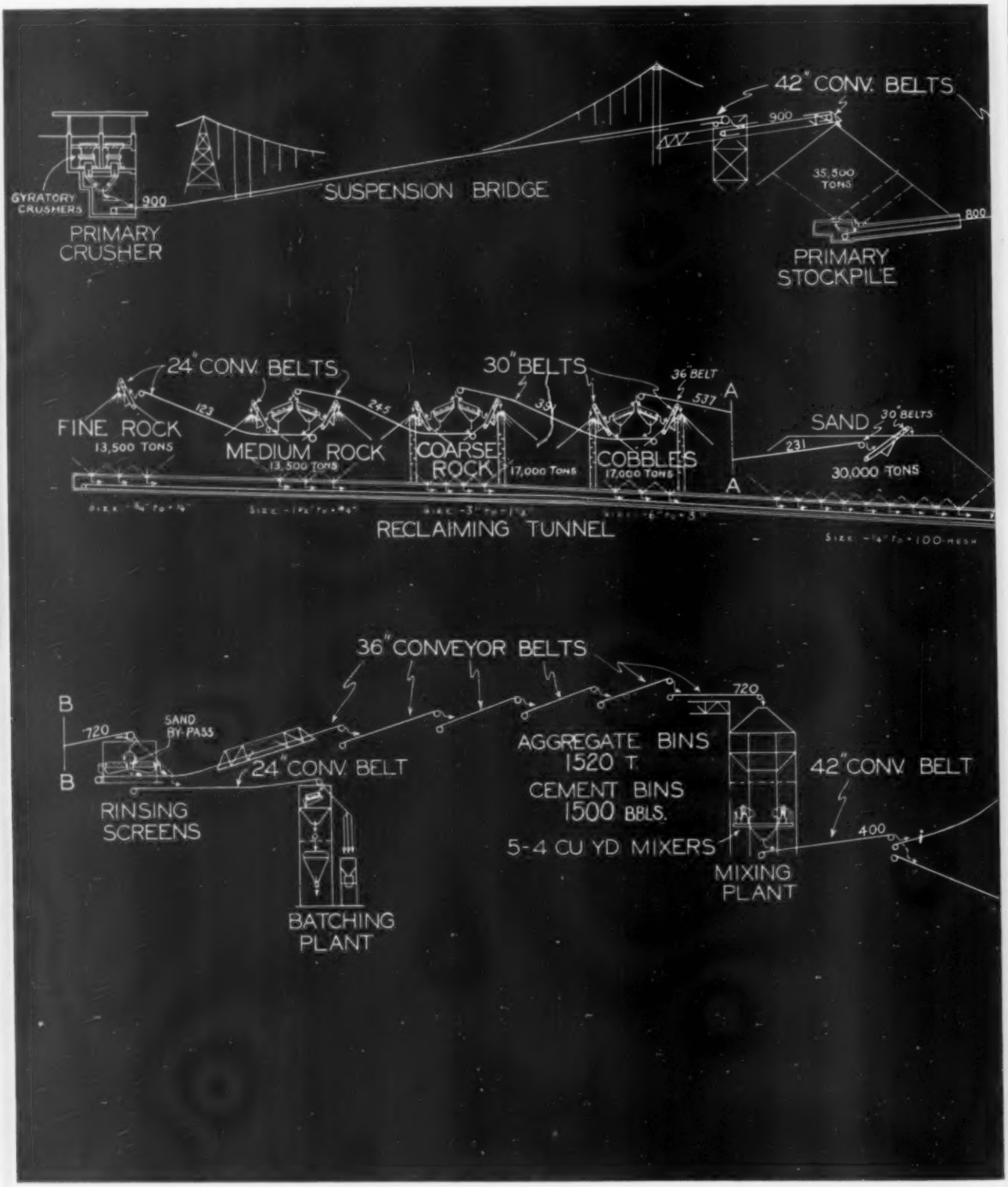
**Close-up of the quarry. Two 3-cu. yd. electric shovels are loading 12-cu. yd. haulage units. Blast hole drills can be seen on the hillside**

A second interesting feature of the Fontana Dam aggregate plant is the extensive use of belt conveyors for handling the aggregates. Even the concrete is delivered from the mixing plant by a series of belt conveyors. In all, there is a total of over two miles of belt conveyors, ranging in size from 42-in. downward. There are a total of 36 separate units. Most of the belts are the Goodyear cord construction type, although Hewitt supplied some of the belts. Barber-Greene, Chain Belt, Link Belt and Robins supplied the idlers, with the former supplying the most. The last named company supplied the rubber disc idlers that are mounted under the belts at points of greatest rock impact. These take up the shock.

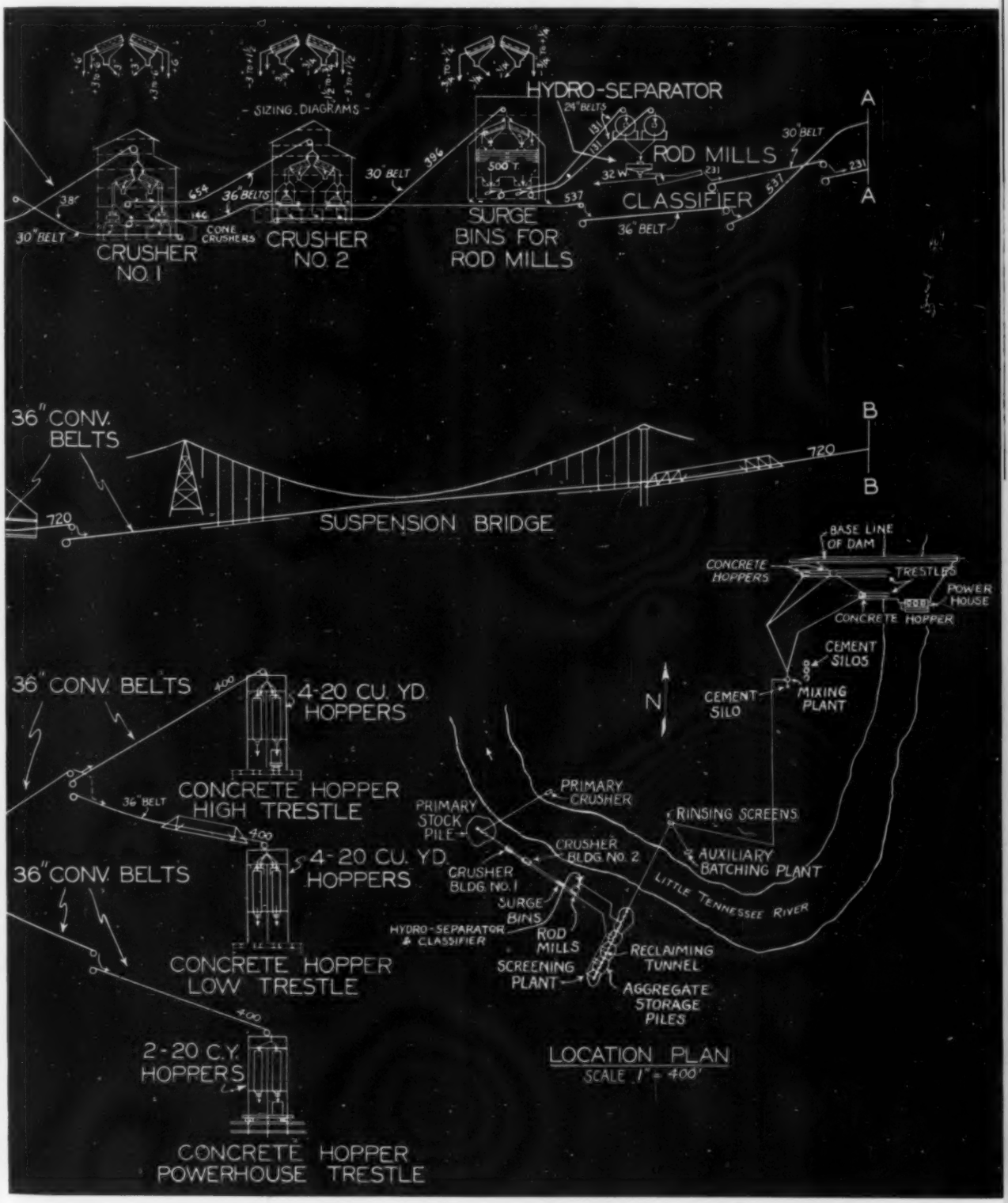
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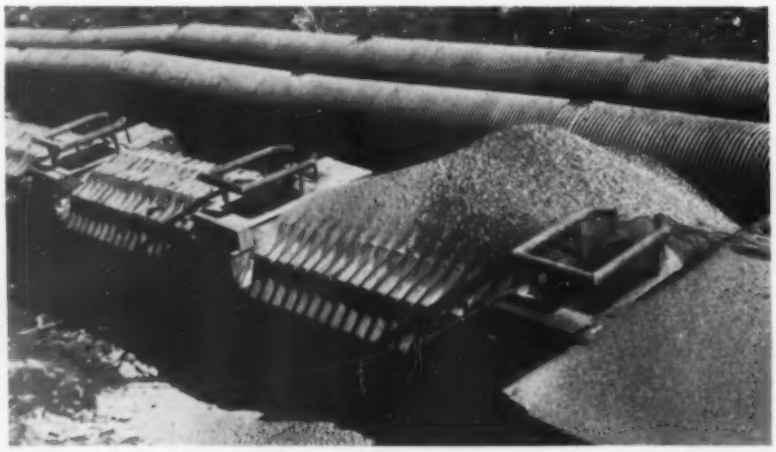
**View of the quarry site, showing suspension bridge over which product from the gyratory crushers is conveyed to the processing plant on the left bank**




Fontana dam flowsheet of crushing, screening and conveying operations for the production of concrete aggregates; also concrete mixing plant. Numerals over conveyors refer to tonnage




**To the right, above, may be seen the arrangement for the manufacture of stone sand, using rod mills, hydro-separator and classifier. Below is the location plan**



Laminated timber reclaiming tunnel. Steam coils have been installed at the fine rock and sand openings. As storage is over a natural ravine drain culverts had to be provided

The units are driven through Jones reducers with most of the drives operating in conjunction with sprockets and roller chains.

Owing to the narrowness of the canyon in which the Fontana Dam is being built, and the location of the quarry, these factors, in conjunction with available sites for the aggregate plant and storage facilities for aggregates, made it necessary to cross the Little Tennessee river twice with belt conveyor sections. The first crossing carries the crushed stone from the two 42-in. Superior McCully (Allis-Chalmers) crushers to the secondary crushing plant. The belt is mounted on a suspension type bridge. This belt is 42-in. wide and has a rated capacity of 900 tons per hour. Incidentally, the rated capacity of the plant is 800 tons per hour.

After the stone has been screened, sized and stockpiled, it is sent across the river a second time to the rinsing plant and on to the storage bins over the concrete mixing plant.

The system of conveyors follow no particular contour but are placed to deliver the aggregates in the most economical manner.

Four sizes of stone are prepared; cobbles (6-in.), 3-in., 1½-in. and ¾-in. All screening is done dry, except at final rinsing plant. Only one size of sand is produced. For secondary crushing, two 4¼ Symons cone crushers are used. For final crushing (preparation of finer sizes or for rod mill feed) there are available two short-head Symons cone crushers. A notable feature in connection with the primary crushing plant, secondary and final crushing plants and the surge bin over the rod mill is the use of Roto-clone dust collectors. These units are deemed necessary to keep the siliceous dust to a minimum. There are four of these units in service.

### Quarry and Crushing Operations

The quarry is located below the dam site, and is operated from one single high face that at present is about 210 ft. high. Before starting operations in the quarry, enough stone was stripped of light soil overburden by hydraulic means. There is a battery of 9-in. Bucyrus-Armstrong churn drills and Ingersoll-Rand wagon drills for drilling operations. Ingersoll-Rand portable Diesel compressors are used, both 315 c.f.m. and 500 c.f.m. capacities.

After blasting, the angular rock is loaded by 3-cu. yd. Marion and Bucyrus-Erie electric shovels to a fleet of 10-cu. yd. capacity Euclid and 12-cu. yd. capacity Hug trucks. The Euclid trucks predominate as to number of units.

The trucks dump direct to the two McCullys. The crushed product falls to a hopper from which the rock is fed to the 42-in. belt by a 60- x 108-in. Jeffrey vibrating feeder. The crushed rock passes over the first suspension bridge to a ground storage pile that has a live capacity of 10,000 tons of stone and a total capacity of 35,500 tons. Under this stockpile runs a 42-in. belt conveyor served by a 48- x 96-in. Jeffrey feeder. The belt delivers the rock to Crusher Building No. 1 where there is a battery of two Tyrock, F-600, 5- x 12-ft. dry scalpers. The screens are mounted back-to-back and have double decks. The top deck is 6 x 7½-in. opening perforated plates. The lower screen has 3¼-in. openings. The oversize falls to the two Symons 4¼ standard cone crushers. The crushed products pass back to the belt conveyor serving the screens, or can be diverted direct to the final screening plant via a 36-in. belt conveyor.

The other sizes can be sent to Crusher Building No. 2 where there are two back-to-back 5- x 12-ft. double-deck Tyrock screens. The top deck has 1⅝-in. openings and the lower deck, ¾-in. The oversize can be sent to the two short-head Symons cone crushers.

A high degree of flexibility is present in the arrangement of the two crushing and preliminary screening plants, so that as changes in the needs for different sizes arise, diversion of most any size of stone can be made so as to meet the new needs. One of the main purposes of the second crusher installation is to prepare stone for the rod mills. This stone is delivered to the rod mill surge bin (500-ton capacity) by a 30-in. belt conveyor. Over the bins are mounted, back-to-back, two 6- x 14-ft. Ripflo single-deck vibrating screens. It was intended that these screens deliver a ¾-in. product (throughs) for the rod mill feed; however, the screen size is changed to meet conditions. At time of inspection, the screen had a ¼-in. x ⅝-in. deck. The oversize from these screens goes to the 36-in. belt that delivers the rock to the screening plant. Rod mills are fed by Syntron feeders that deliver the stone to two 24-in. inclined belt conveyors serving each rod mill.

### Screening Plant

All the crushed stone not used by the rod mill sand grinding plant is delivered to the screening plant where four sizes of stone are prepared. In the cobble screening plant are two vibrating screens that prepare the cobbles (3-in. to 6-in.). These products fall to Barber-Greene stacker conveyors mounted at right angles to the general flow of material. The stackers deliver to ground storage that has a capacity of 7000 tons live storage and 17,000 tons total storage. The throughs from this battery of screens pass to the coarse rock screening plant which is almost identical with the cobble plant except that 3-in. to 1½-in. sizes are prepared and similarly stockpiled. The coarse rock stockpile is the same size as the cobble stockpile.

The throughs from the coarse rock plant pass to the medium rock



Dump trucks discharging into two 42-in. primary crushers. The product of these crushers is conveyed across the river by conveyors supported on the suspension bridge. Note the primary stockpile and crusher buildings No. 1 and No. 2 across the river and the wet-type dust collector near each building

Processing plant on left bank. Primary stockpile is at the extreme right, followed by crusher building No. 1, crusher building No. 2, rod mill feed surge bin, and rod mill building. Stackers extend out over a natural ravine which forms the storage for the sized aggregate. Conveyor spanning river at extreme left, conveys processed aggregate to the right bank where the mixing plant is located





Aggregate processing plant. Primary stockpile, crusher buildings Nos. 1 and 2, rod mill feed surge bin, and rod mill building, in order. Conveyor in foreground extends back to crusher building No. 1

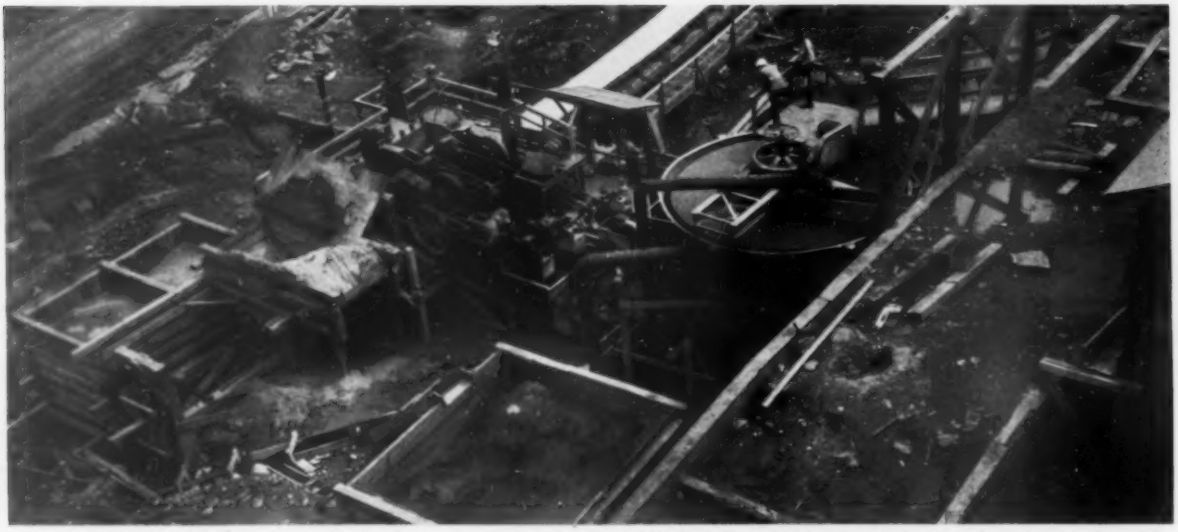
screening plant where there are two vibrating screens similarly mounted as in the other two screen plants. The Barber-Greene stackers here build ground storage to 5100 tons live capacity and 13,500 total capacity. The throughs from this battery of screens passes to the fine storage stacker where a stockpile of 5800 tons live capacity is maintained, with a total capacity of 13,500 tons.

The three batteries of vibrating screens are constructed on the side of a small canyon. Under the stockpiles of crushed rock and sand is a reclaiming tunnel which serves the rock and sand storage piles. Operating in this tunnel is a 36-in. belt which delivers to a second belt that carries the material across the river for the second time via a suspension bridge. This conveyor delivers the material (sand excepted) to two 5- x 14-ft. Symons rinsing screens. Here the stone receives a thorough rinsing and passes on to the aggregate bins at the ready mixed concrete plant. Six separate belt conveyors are required to get the stone from the rinsing plant to the ready mixed concrete plant.

In the rinsing plant is a by-pass so that sand or stone can be sent to a batching plant. Here is a 2-cu. yd. batcher. A fleet of Jaeger truck mixers is employed for delivering batches of concrete to the many different construction jobs going on about a project of this size. Here also sand can be dried for sandblasting as considerable of this material is used for cleaning the face of concrete before making another pour.

### Concrete Mixing Plant

The mixing plant follows the same general method of operation used in the large dam construction projects with practically all of the operations being automatic. At present the plant is delivering over 9000 cu. yd. of concrete per day with 10,000 cu. yd. capacity in prospect. In the plant are five 4-cu. yd. Smith mixers provided with Johnson weigh batchers.



Bowl hydroseparator for dewatering discharge from rod mill and rake-type classifiers employed to eliminate slimes



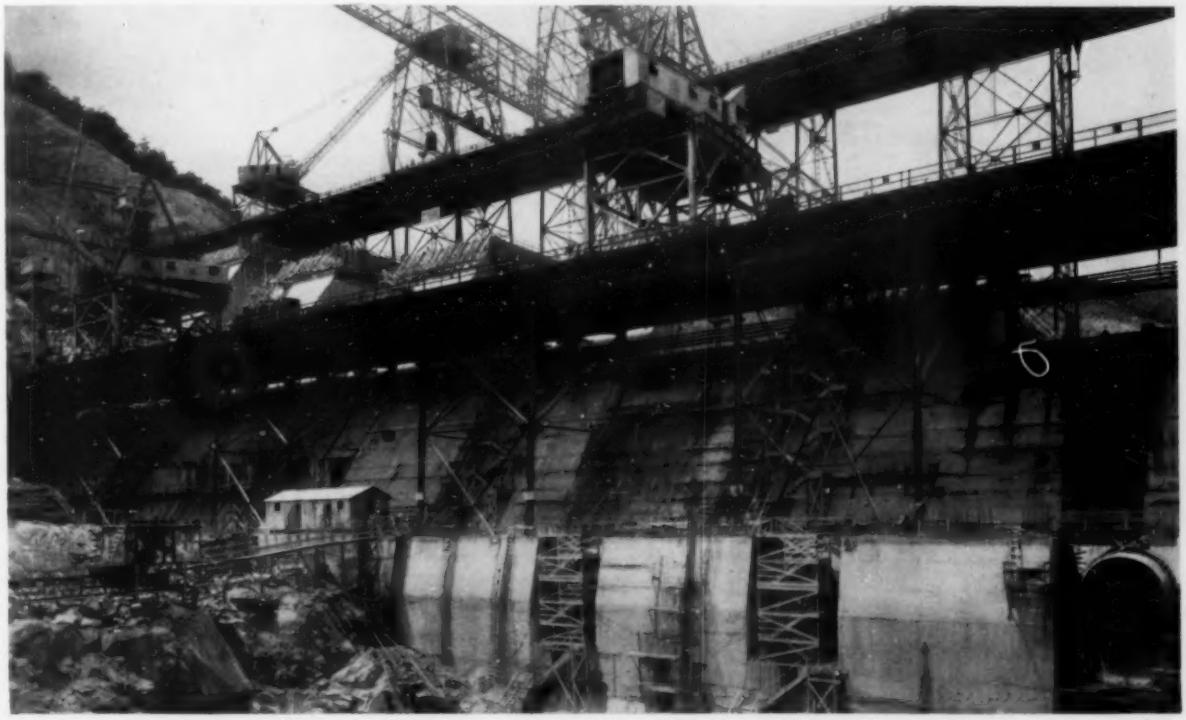
**Night view of the aggregate plant. Note aggregate being discharged from the cantilever truss over the primary stockpile. Two suspension bridges spanning the river are outlined by the rows of lights**

The mixers set in a circle with aggregates delivered to each mixer by a single revolving spout that is synchronized to move to a new location when a mixer has been dumped. Mixing time is set at 2.15 minutes with a complete cycle for one mixer set at 2.30 minutes. Consistency meters are being installed. These will record the consistency of each batch. Thus a record of each batch of concrete will be available.

Cement is delivered in bulk to the dam site by rail. The cement is unloaded by Clark-Beatty unloaders to Robinson cement pumping equipment that delivers the cement to silos. A second Robinson unit delivers to the cement bins at the mixing plant. A Sturtevant dust collector is used at the storage silo to control any cement dust.

After mixing, the concrete falls to an inclined belt conveyor that carries the wet concrete up a 13 deg. 9 min. grade. This is a 42-inch belt and is heavily loaded at a speed of 215 r.p.m.; the wet concrete does not run back. Belt is smooth. This belt

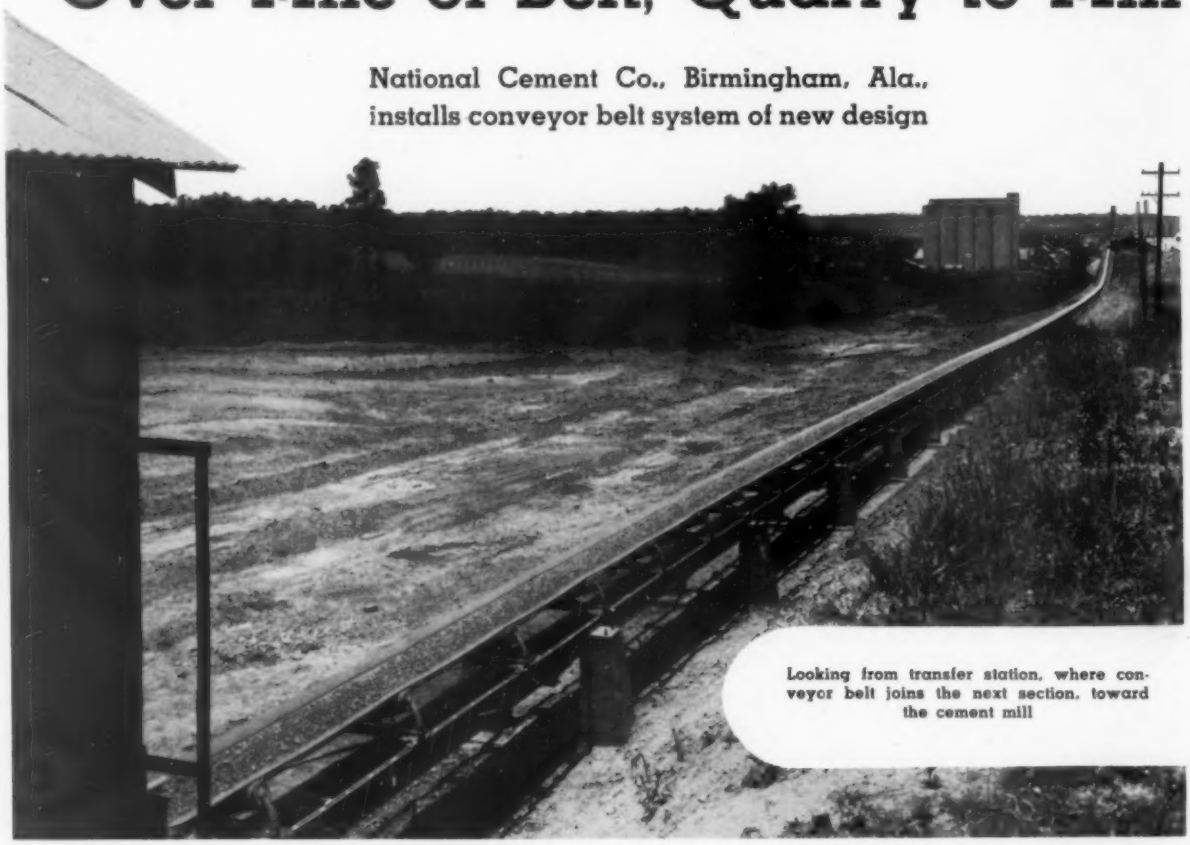
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**Close-up of the powerhouse trestle and the dam low-level trestle. Two 40-ton electric cranes with 125-ft. booms operate from the power house trestle. Two 40-ton electric cranes with 125-ft. booms and two 300-ft. double cantilever hammerhead cranes operate from the dam low-level trestle. This trestle will be raised about 210 ft. for the completion of the dam**

# Over Mile of Belt, Quarry to Mill

## National Cement Co., Birmingham, Ala., installs conveyor belt system of new design



Looking from transfer station, where conveyor belt joins the next section, toward the cement mill

By WALTER B. LENHART

TRANSPORTATION of raw materials from the quarry to the plant in many Southern States did not receive much study prior to the Wage-and-Hour laws. Labor was plentiful and cheap so that reasonably low costs could be obtained with any of the more conventional transportation systems. The trend now through the South is to take advantage of the more recent methods of transportation, and one of the leaders in pioneering this tendency was the National Cement Co. of Birmingham, Alabama, whose plant is at Ragland, about 50 miles east of the steel city.

About two years before the present war crises appeared, the company made a thorough study of transportation of rock and clay from its quarry to the plant and soon thereafter decided to use belt conveyors for this purpose. An order was placed with the Continental Gin Co. for the entire job and the materials assembled about the time Pearl Harbor hit us.

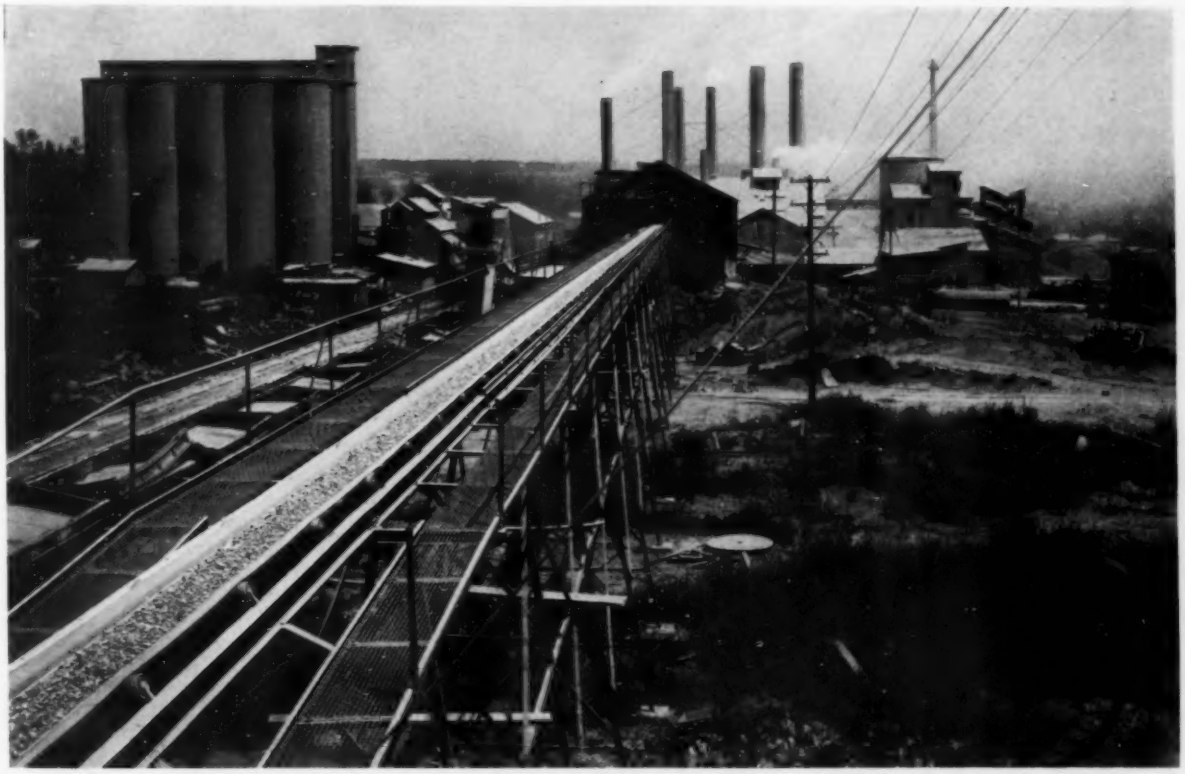
As cement is a critical war material, especially in the ship building plants and scores of Army bases, Naval bases, training camps, etc., in the district, it certainly is essential that a cement plant be maintained at top efficiency to quickly fill that need. It was further apparent that the old steam rail haulage system was inadequate and it was therefore a choice of truck rubber vs. belts, and due to local conditions the company chose the latter.

This transportation system should not be confused with many hastily built field conveying systems that are more or less thrown together to fill a temporary need. This system is built for permanence and shows the results of good engineering on the part of the staff of Continental Gin Co., the designers, and, similarly, shows the result of skill and good workmanship on the part of the National Cement Co.'s staff who installed the conveyor system.

### Open New Quarry

The quarry is, roughly, 6500 ft. from the plant and the belt conveyor system connects the two with a transportation system made up of seven belt conveyor units. Very little excavating was done and the belts follow the contour of the gently rolling hills. Also, the seven units do not follow in a straight line but form an arc of a circle, more or less, of large radius.

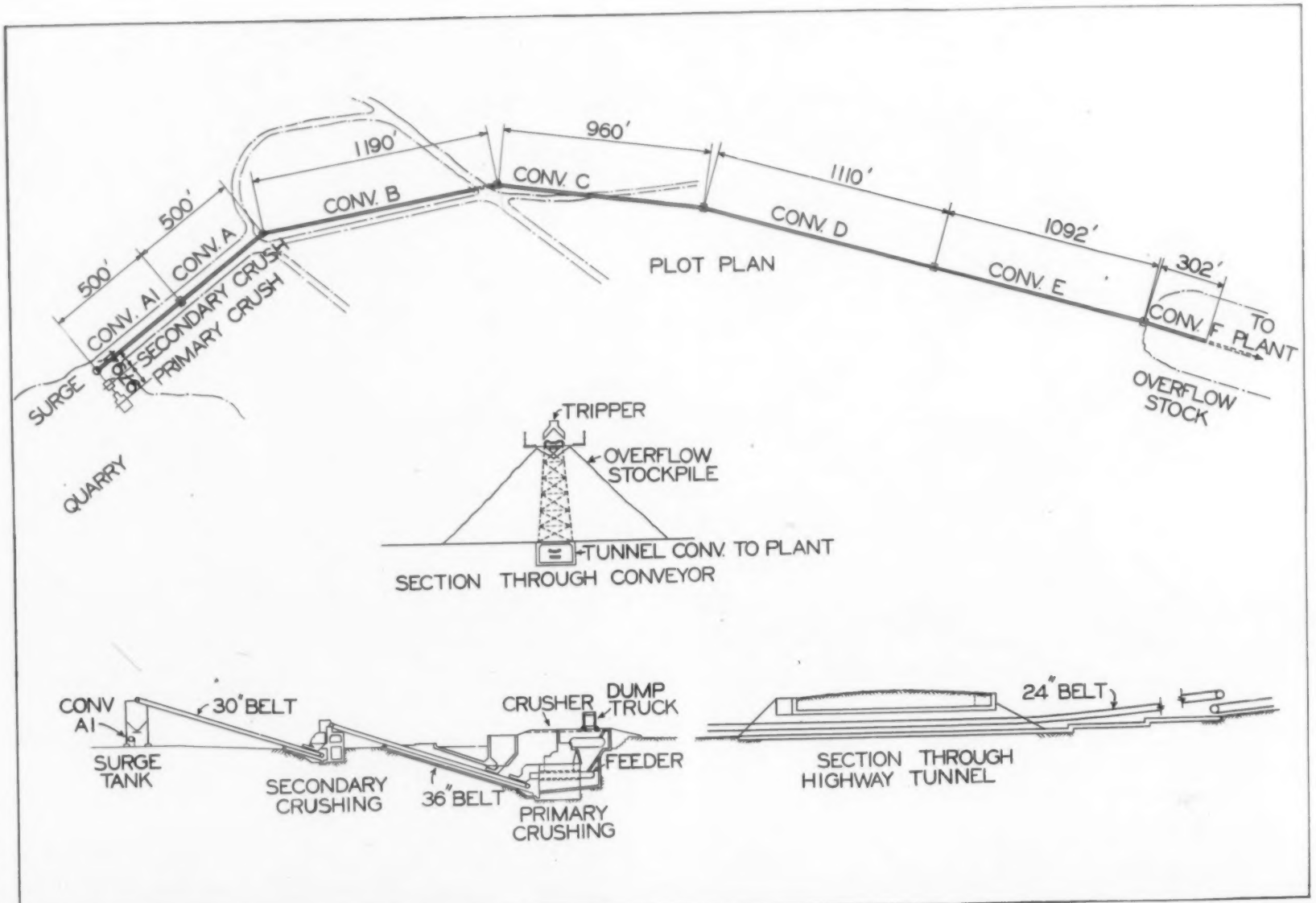
The belts, which are 24-in., 6-ply, were supplied by the United States Rubber Co. Each unit (all about the same length) is driven by a 25-hp. General Electric motor through a Foote Bros. gear reduction unit and



Long conveyor belt system supported on a steel trestle structure as it inclines upward to the cement plant

Concrete piers support belt conveyor over one of the seven sections. Note steel mesh walkway and welded pipe guard rail






Transportation of raw materials from quarry to mill, a distance of 6500 ft., is by means of seven belt conveyor units. Below may be seen elevation details and section views of the conveyor system, including primary and secondary crushing layout

enclosed, oil-tight, roller chain drives. The system has a capacity of 225 tons per hour. All electric motors in the system are tied into a switchboard in such a manner that failure of any unit or stoppage of flow of material causes the entire system to stop.

Carrier troughing rolls and return rolls are of special Continental Gin Co. design which are spaced on 5-ft. centers for the carrier rolls and on 10-ft. centers for the return rolls. A few guide rolls are installed at strategic points more to overcome minor belt misalignments due to wind causes. One operator looks after the greasing and maintenance of the entire system and he makes three to four trips per day over the system.

Both limestone and clay are handled by the conveyor system as the company is fortunate in having materials easily available from the same pit. The quarry is located on a shale-limestone contact. One face supplies the stone and the other side of the pit supplies two grades of shale, one a high alumina shale and other a high silica material so that proper mixes can be obtained from the one pit.

There is ample capacity in the transportation system to take care of present needs and, since its installation, it has been found that operating five days per week is sufficient to take care of the plant needs. During the two "off" days, the lone caretaker touches up any needed parts of the system and proposes to use that time to make needed repairs, although to date, after over 1½ years of operation, no repairs have been needed except of a very minor nature.

Structural members carrying the troughing and return rails are rather unusual. They are not the conventional channel iron but are made up in 16-ft. sections of ¾-in. reinforcings rods (same as used in concrete). Longitudinally there are four of these rods, two at the top and two at the bottom, and about 7 in. below the upper rods. Diagonal trusses comprise ⅜-in. diameter rods, electrically welded, making a bridge-like construction unit. These are cross-braced with electrically welded ¾-in. rod. The 16-ft. sections, mounted on neat concrete piers, were fabricated by the Continental Gin Co., and are modest as to first cost.

### Frame Structure Protects Conveyor Belt from Weather

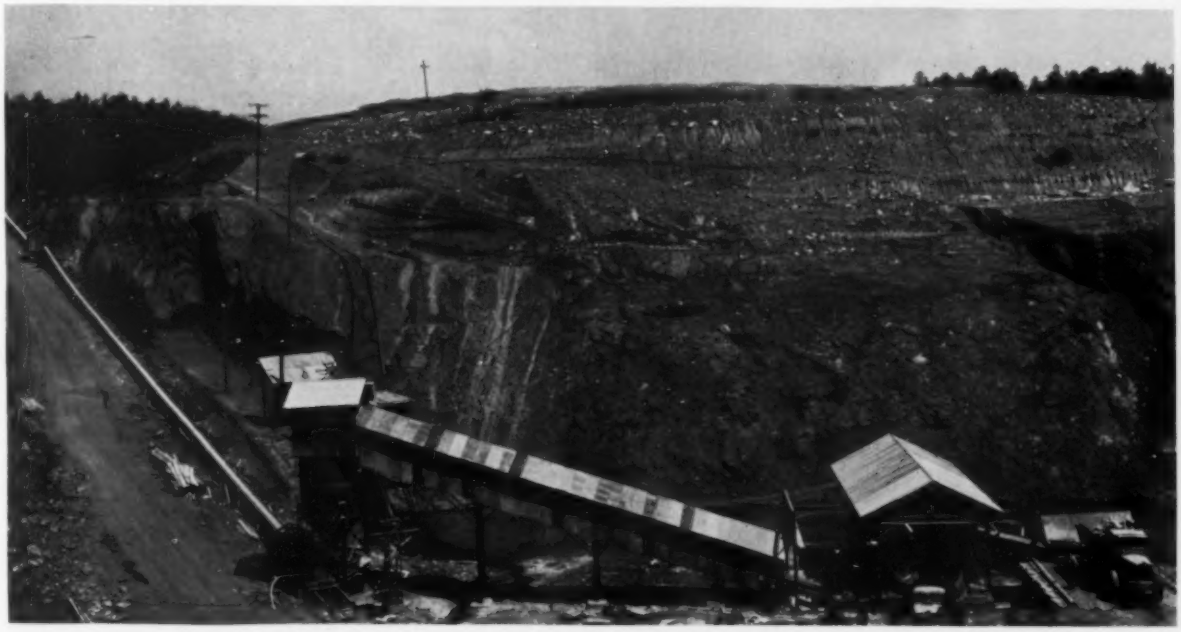
Belts are protected from the weather by a frame structure over its entire length. This is made up of 2 x 4's and 1 x 4's, wood construction and covered with galvanized iron. Cattle and other stock are kept away from the belts by a substantially built barbed wire fence using concrete posts. At one point the conveyor passes under the State highway through a reinforced concrete tunnel. Each of the G.E. motors and Foote gear reduction units are housed in a corrugated iron building.

The tail pulley on all these units is of the floating type. The 24-in. diameter pulley is mounted on four small diameter, flanged wheels that ride on a suitable steel track. By means of a steel cable, sheave and counterweight, proper tension is maintained on the belt at all times. The counterweights are specially designed concrete blocks assembled in a steel framework.

### Quarry Operations

Crushed limestone (or clay) on arrival near its destination passes up-grade. Here the belt conveyor system is carried on concrete pillars up to about 20 ft. high. The crushed material at this point is unloaded by a Jeffrey tripper to ground storage for the stone—to a steel tank for the shale. These materials are reclaimed at the plant by underground tunnels and belt conveyors.

In the quarry about 10 ft. of overburden is stripped off. The face of the limestone is about 60 ft. high and is drilled for blasting by a well drill and Ingersoll-Rand wagon drills. The stone breaks blocky and secondary drilling is done with jackhammers. Loading is done with two steam shovels and transportation to the crushers by two Hug trucks and one International. The haul is very short (100 to 150 ft.).



One of three large capacity trucks dumping quarry stone into hopper feeding pan conveyor which moves stone to 42- x 48-in. jaw crusher. Conveyor takes crusher throughs to steel tank from which it is fed to long crusher. Illustration taken before crusher buildings were completely enclosed

Limestone is dumped to a 4- x 16-ft. pan conveyor of very rugged construction. It is driven by a G.E. motor through a Foote speed reduction unit. The pan conveyor serves a 42- x 48-in. Allis-Chalmers Superior Jumbo jaw crusher which is driven by a 200-hp. motor by means of a flat, short center belt and tightener.

The crushed stone falls to a 36-in. belt conveyor that delivers to a second pan feeder serving a Dixie hammer mill. A 30-in. inclined belt delivers to a small cylindrical steel tank from which the stone (or clay) is delivered to the new belt conveyor system. Feed to the belt system is controlled by a Challenge-type feeder to which is attached an r.p.m. counter. Calibration of the feeder in pounds in conjunction with the revolutions gives a daily tonnage figure. This bin is provided with an electric vibrator to jar down any materials that tend to hang up.

At the head end of the belt is a device that actuates a signal at the hammer mill so the operator there is warned of any trouble along the belt line. The Dixie hammer mill is directly connected to a 200-hp. G.E. synchronous motor.

Any water accumulation in the quarry is pumped to waste by two 6-in. Worthington centrifugal pumps direct connected to G.E. motors.

The Ragland plant uses the dry process and has five kilns with an annual output of 1,750,000 bbl. of "Coosa" cement.

Officers of the company are: George A. Nicholson, president; L. E. Bayer, executive vice-president and secretary; J. M. Dannelly, Jr., vice-president in charge of sales; W. B. Catterlin, treasurer; W. H. Thomas, superintendent at Ragland; F. G. Rinnert, quarry superintendent; J. E. Shaddix, chief chemist.

## Agricultural Limestone Plant In Louisiana

GOVERNOR SAM H. JONES of Louisiana has announced that an agricultural limestone plant will be installed at Friendship, 14 miles west of Jonesboro, La. It is to be operated jointly by Shreveport and other Northern Louisiana and New England Interests. Initial capacity will be about 300 tons daily. The Governor said that this would be the first agricultural limestone plant in the State. He said that 1,500,000 acres of land in northern Louisiana alone are in need of liming.



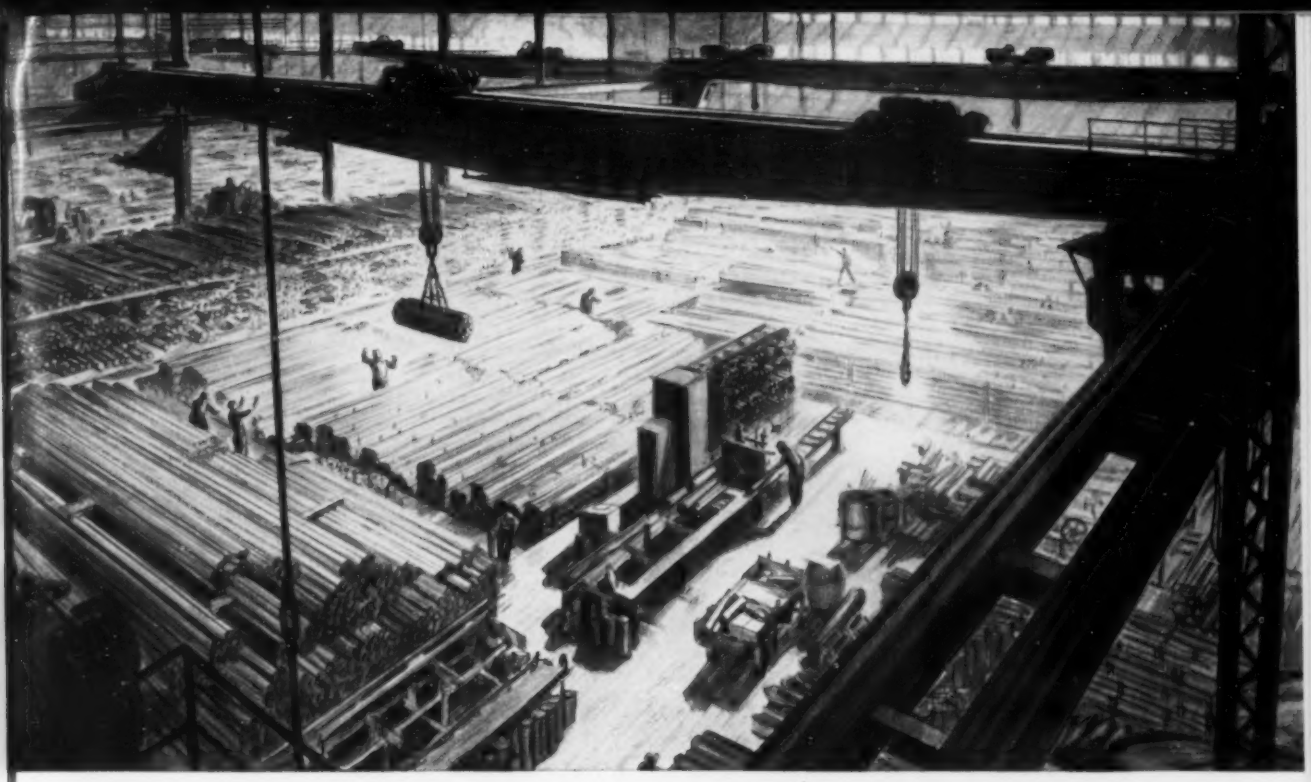
One of the transfer houses where material is transferred from one belt conveyor section to another. Note concrete weights in steel frame lower to left which controls tension through cable and pulley system to belt



Conveyor belt tripper which unloads crushed material to ground storage for store and to a steel tank for the shale



Drilling in the quarry with a wagon drill



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# ITALIAN PUZZUOLANAS ARE STILL BEING USED



Fig. 1: Crushing and screening plant in puzzuolana quarry near Bacoli, Italy

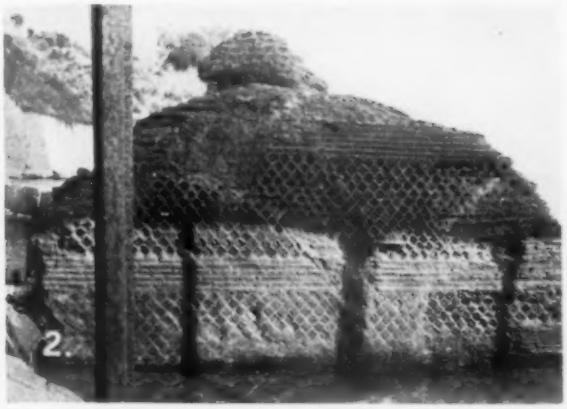


Fig. 2: Ancient Roman breakwater built nearly 2,000 years ago which was constructed of puzzuolana concrete

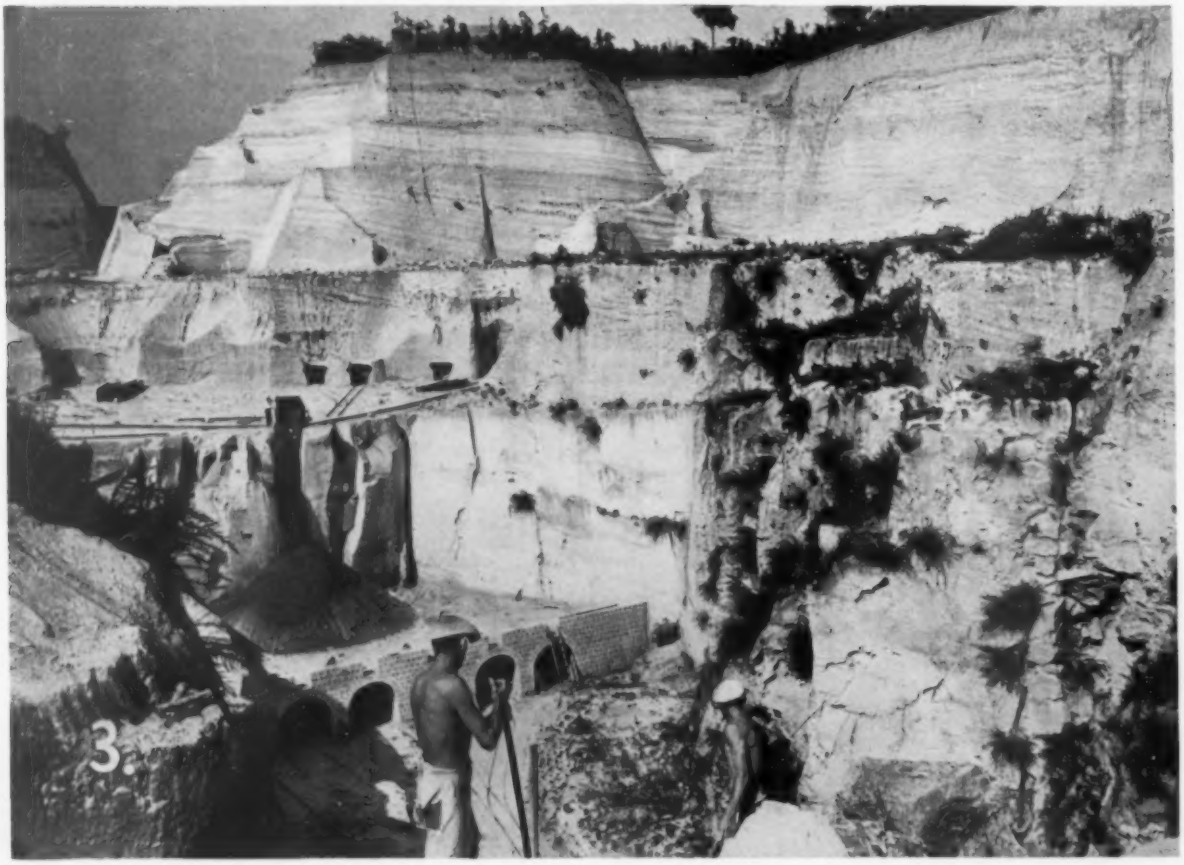
Fig. 3: Looking down into quarry as it looked in 1938

Photos by Hamilton Wright

NAPLES, ITALY, has had its share of pounding from American and British bombs, and perhaps when this article appears in print the port and city will be in the hands of the Allied Nations. Near Naples is Bacoli where are ancient quarries of puzzuolana, which have been operated since the time of the Roman Empire.

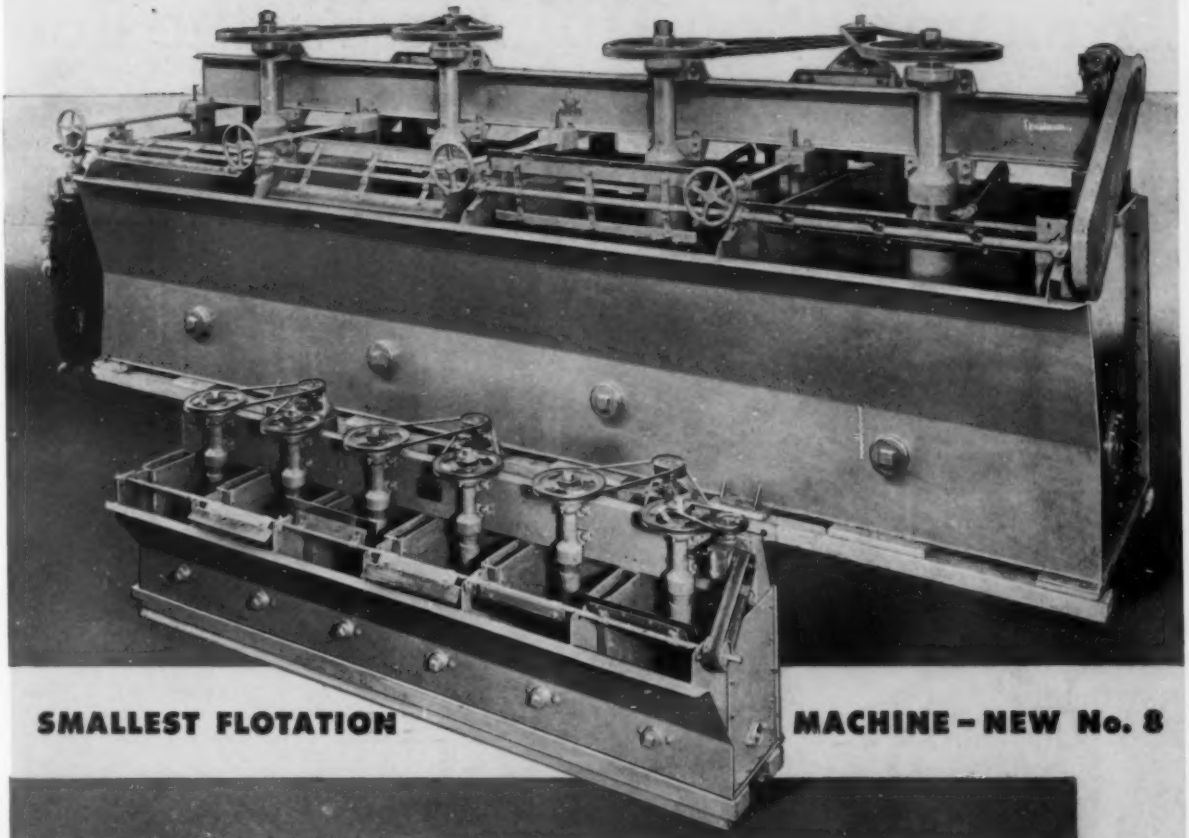
American engineers and cement manufacturers, when they enter

*(Continued on page 79)*



# Largest Flotation Machine Built

## THE NO. 30 DENVER "SUB-A"

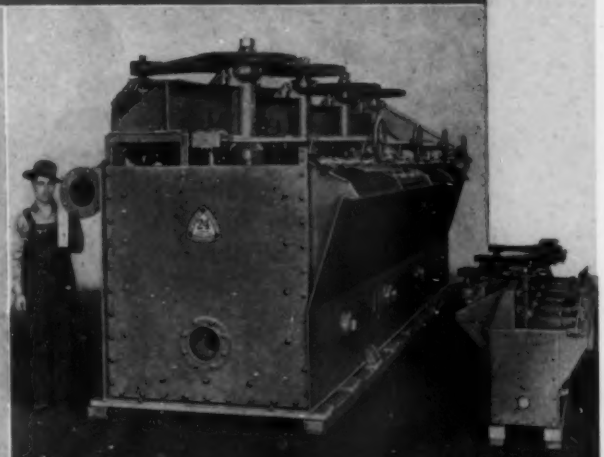


**SMALLEST FLOTATION MACHINE – NEW No. 8**

**Largest** *commercial* flotation cells are the No. 30 Denver "Sub-A" Machines . . . designed to handle large tonnages of critical metallic and non-metallic minerals. Under war conditions, the applications of these machines and the plants using them cannot be discussed, but they are increasing production in many countries the world over.

Smallest *commercial* flotation cells are the new No. 8 Denver "Sub-A" Units used for "24-Hour Service" on continuous operations where small tonnages are treated.

For *every* flotation problem there is a Denver "Sub-A" to meet your requirements.



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**DENVER EQUIPMENT COMPANY, 1400 17th St., Denver, Colorado**

HAULAGE

# Transportation Units to Fit the Job

**Andersen Sand & Gravel Co. hauls aggregates in specially designed 40-ton capacity tractor-trailer units. Operate seven ready mix trucks**

TRANSPORTATION of crushed stone aggregates via water presents a competitive problem to many of the sand and gravel operators bordering on the Great Lakes area. The railroads in the area are none too cooperative in getting a favorable rail haul rate. Some producers had to beat this tough combination or go out of business. F. N. Andersen, president of the Andersen Sand & Gravel Co., at Saginaw, Michigan, has so far very ably solved the difficult problem by designing and building truck bodies that carry a 40-ton pay load. He started this truck development in 1936 and by 1938 had four White tractors with Cummins Diesel engines equipped for hauling these loads.

These units are of the tractor-semi-trailer type with eight wheels using a total of 30 tires. Three of the bodies are of the balanced, roll-over type and one is a bottom dump equipped with a quadrant gate. The main loads are carried in two "V" shaped hoppers. The front hopper handles 18 tons with the second holding 22 tons. The tractor uses No. 1100-20 tires and the Fruehauf semi-trailers use 1000-20. Illustrations give a better idea of their construction.

*(Continued on page 68)*



**Left: One of the seven ready mixed concrete trucks leaving the plant at Saginaw, Mich.**

**Below: Special bottom-dump, semi-trailer-tractor unit dumping aggregates to ready mixed concrete plant hopper feeding bucket elevator**



Paving Under Giant Crane Runway for Caterpillar Tractor Company War Plant. Photo Courtesy of Caterpillar, Peoria, Ill.

# JAEGER OPERATORS WILL PROFIT FROM THIS LESSON!

War jobs like this, totalling multi-millions of yards of concrete more efficiently mixed and placed with Jaeger Truck Mixers, have fully educated the architect, engineer and contractor to the advantages of "ready-mix" service with this mobile, flexible type of concrete plant.

In coming years, operators of Jaeger Truck Mixers will profit greatly from this lesson, particularly as they continue, in spite of limitations on new truck mixers, to maintain the wartime standard of service they have already set.

Longer life has been built into your Jaegers. Your Jaeger distributor and Jaeger traveling engineers are always available to help you keep your truck mixers rolling smoothly to Victory — and beyond.

## THE JAEGER MACHINE CO.

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**RECOMMENDATION 1:**

Make each driver responsible for his unit. Send for Jaeger Manuals and insist on operation, cleaning and lubrication as specified therein.




**RECOMMENDATION 2:**

ARRANGE WITH YOUR JAEGER DISTRIBUTOR FOR A REGULAR 30-DAY CHECK-UP ON EVERY MACHINE.



Dredge excavating material for sand and gravel plant at Juniata, Mich. Plant may be seen in the right background

Drivers quite often make 85-mile hauls with these trucks competing so successfully with the railroads that the company does not use the railroad facilities for any of its business. Most of the material goes northwest of Saginaw with none going south of that city.

The company's sand and gravel plant is located at Juniata, Michigan, which is 30 miles east of Saginaw. It also has a ready-mixed concrete plant in Saginaw, and all the material for this plant is hauled from their Juniata plant to Saginaw in these trucks. It requires about three hours to make the round trip from the plant to Saginaw. The trucks get from 4 to 6 miles per gallon, depending on the age of the truck.

The trucks on arrival at the ready mixed concrete plant dump to a hopper serving a bucket elevator. The elevator delivers to one torpedo sand and three gravel bins. Batching is done with Erie "Aggremeters," using one for the cement, one for water and one for the aggregates. Two cements are available. Inter-yard and office communications are maintained by



Trailer, semi-trailer and tractor haulage units taking a load of aggregates from truck bins at sand and gravel plant. Tractor is powered with a Diesel and bodies are of the roll-over dump type



# Setting new Records!

**Record No. 1:** Twin-Unit Plant, shown in the photographs, with 10″ x 36″ jaw crusher, and 40″ x 22″ roll crusher. Airport construction job in California, requiring both 1¼″ minus and 2½″ minus. Production for entire job averaged 500 tons per hour, crushing 25%.

**Record No. 2:** Quarry work in California. Twin Unit Plant with 21″ x 38″ jaw crusher, and 40″ x 22″ roll crusher. Averaging 400 to 450 tons per hour, to 2″ minus, crushing 50%.

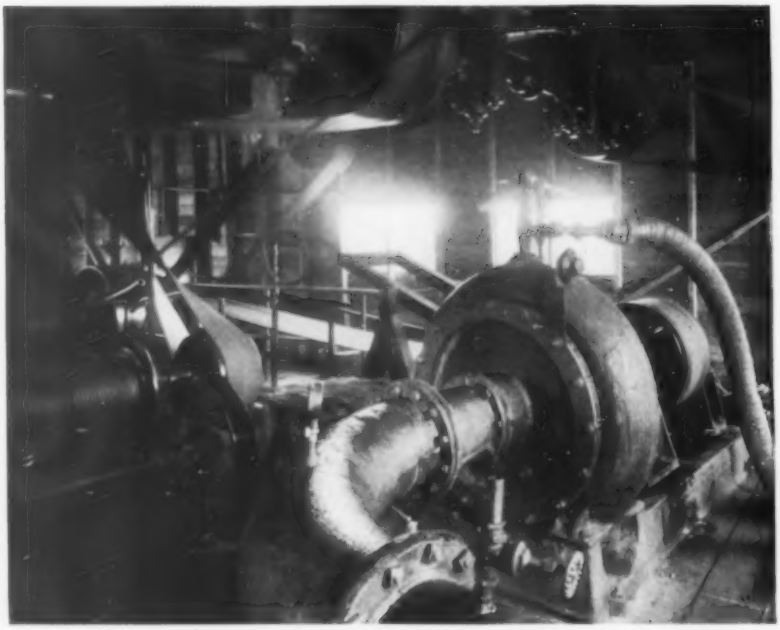
Production records like these—never before approached in a portable plant to our knowledge—explain why more and more operators are building their plans for wider and more profitable operations around the Austin-Western Twin Unit Plant. We'll be glad to tell you the whole story. THE AUSTIN-WESTERN ROAD MACHINERY CO., Aurora, Illinois, U.S.A.

BUILDERS OF ROAD MACHINERY

**Austin Western**

SINCE 1859





Interior of dredge showing 8-in. pump. Power is derived from two Diesel engines

a small twin phone and "Executone."

The batchers serve a fleet of seven Jaeger mixer trucks, six of the trucks being of the high-side type and one of the low side. Nelson Hayes is superintendent of the ready mixed concrete plant.

The company built its first gravel plant in 1929 but in 1940 moved to the newer site at Juniata. They only market sand, gravel and ready mixed concrete, and have found it best to keep the capacity of the plant down to the figure quoted below. "Many times, in the past," said Mr. Andersen, "I have been tempted by juicy contracts that were almost in my back yard but I have preferred to stay as a small operator with a steady and uniform business." That this policy has some merit in Mr. Andersen's case is evidenced by the general tone of neatness about his Saginaw yard and the impressive office structure.

### Sand and Gravel Plant

The sand and gravel plant uses an 8-in. Amsco pump equipped with a Diamond cutter. This pump delivers a distance of about 250 ft. to a second 8-in. Amsco pump that is used as a booster. It has been found in their experience that by using a booster that slower pump speeds can be maintained with savings in power, and pump wear, as well as less trouble from sanding up the pipe lines.

The power plant for the dredge is a six cylinder Benz engine made by the Chicago Pneumatic Tool Co. The unit is rated at 210 hp. and con-

*(Continued on page 93)*





Left: Scraper bucket stockpiling sand in Kern storage system. Right: Rinsing screen is mounted over truck loading bins

# Working and Saving Keep Them Waving



## THREE TIMES WON FOR EXCELLENCE IN WAR PRODUCTION

Richard Kauzlaurich, husky machine operator, topped the winners in 14 other departments with a work record average of 10 hours and 48 minutes nightly since the first of the year. To him went the honor of hoisting the Navy E flag awarded for the third time to the employees and management of the Union Wire Rope Corporation. To him (and his 3 year old son, Richard, Jr.,) went the congratulations of Rear Admiral Alex M. Charlton, U.S.N., Inspector of Navy Material, Chicago.

In praising the company's production record, Rear Admiral Charlton said the wire rope it has made for the Navy in recent months would stretch from the Union Wire Rope plant to Guadalcanal, take a hitch around a palm tree and extend on to Australia.

Union Wire rope employees are pledged to save to keep the Treasury Minute Man burgee flying. The men and women of Union Wire Rope are also working day and night to produce wire rope so vital to winning the war.

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Your wire rope still faces a tough assignment. It must continue to work overtime, often under overload, with chances of replacement limited.

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Why? Because modern warfare is dependent upon wire rope to hoist, handle, load and unload vast tonnages of war materiels.

To help you save wire rope and keep it working, we offer free for the asking, 5 booklets, entitled: **1. Splicing Wire Rope, 2. Socketing Wire Rope, 3. Correct Handling of Wire Rope, 4. Lubrication of Wire Rope.** These give you specialized information. **Rope Dope (5)** amplifies on abuses of wire rope and their remedies. All are written in non-technical terms. Put into practice, the information these booklets contain will stand you in good stead now and post-war.



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# union Wire Rope corporation

# Elementary Principles of Flotation

## Part 1: Filming Processes

By JOHN DASHER[1]

### Foreword

*● We are fortunate in being able to publish the series of articles that follow on the Elementary Principles of Flotation as Applied to Industrial Minerals, by John Dasher, formerly of the United States Bureau of Mines and who is now a consulting engineer specializing in problems of mineral flotation.*

*We wish that every reader of ROCK PRODUCTS would read all of these articles. At first sight they may appear rather complicated and technical to some, but read them anyway and absorb what information you can, because flotation is the coming process in the non-metallic industries.—The Editors.*

### Introduction

FLOTATION, or as it is more properly called, froth flotation, is an efficient economical process for the physical separation of grains of different minerals. Solid minerals are chemical compounds of definite or restricted chemical composition with unique crystal properties. Usually two or more minerals are associated in rocks. The deposits of useful minerals in pure or relatively pure form are being used. For every useful mineral there is a time when it becomes economic to use physical separation of the mineral from its impurities. For some minerals the time has long since come, for others it has almost come, and for others it may be far away. Even the common minerals quartz and calcite (limestone) are now being separated in some cases from the impurities with which they are associated.

The processes used for physical separation depend on differences in the properties of the minerals to be separated. There are processes which separate minerals of different density, hardness, magnetism, electrical resistance, size or shape. However the most widely used processes separate minerals by selectively filming them so that they have a difference in wetability. These processes are called filming processes and include froth flotation, and other now obsolete forms of flotation, agglomeration, and adhesion. The difference in wetability, or desire to be wet with water, is usually induced by filming the particles, while they are covered with water, with a polar-nonpolar organic compound called a collector. One end of the collector molecule is oil- or air-avid and water-repellent (hydrophobic) and the other end is oil- or air-repellent and water-avid (hydrophillic). By proper choice of collector, minerals of different chemical composition can be selectively filmed so that some are hard to wet with water (water-repellent) while others are unfilmed and are easily wet with water (water-avid).

The minerals present in rocks are

[1]Member of the firm, Norman, Dasher & Newell, Consulting Mineral Dressing Engineers, La Marque, Tex. Formerly assistant chemical engineer, Eastern Regional Laboratories, Bureau of Mines, College Park, Md.

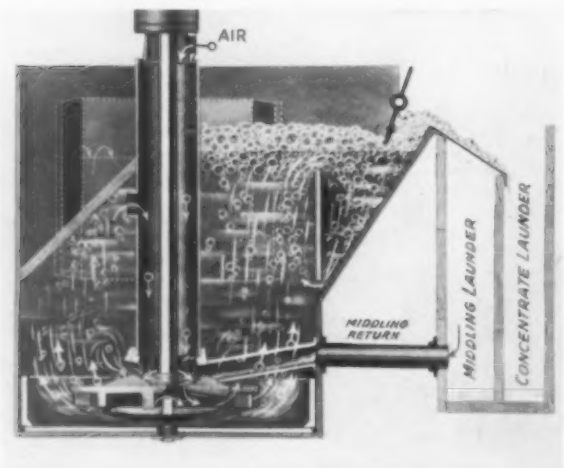



Fig. 1-A, above: End view of Denver cell shows method of returning middling to the cell from the front side of machine. This product (middling) flows by gravity from one cell to any other cell without the use of pumps. Stationary hood protects impeller from sanding-up after a shut down

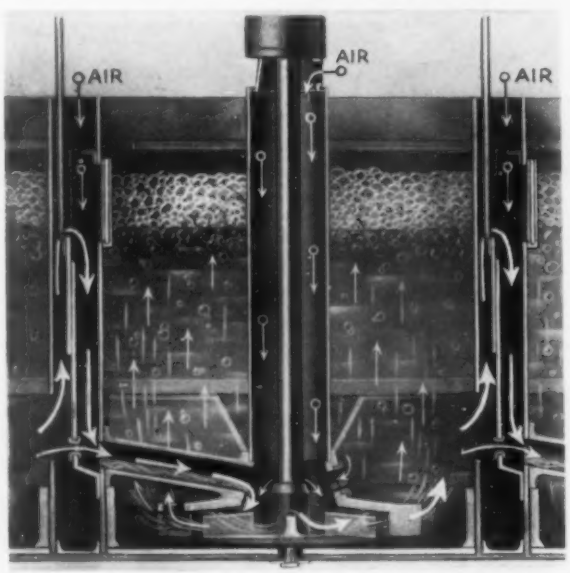
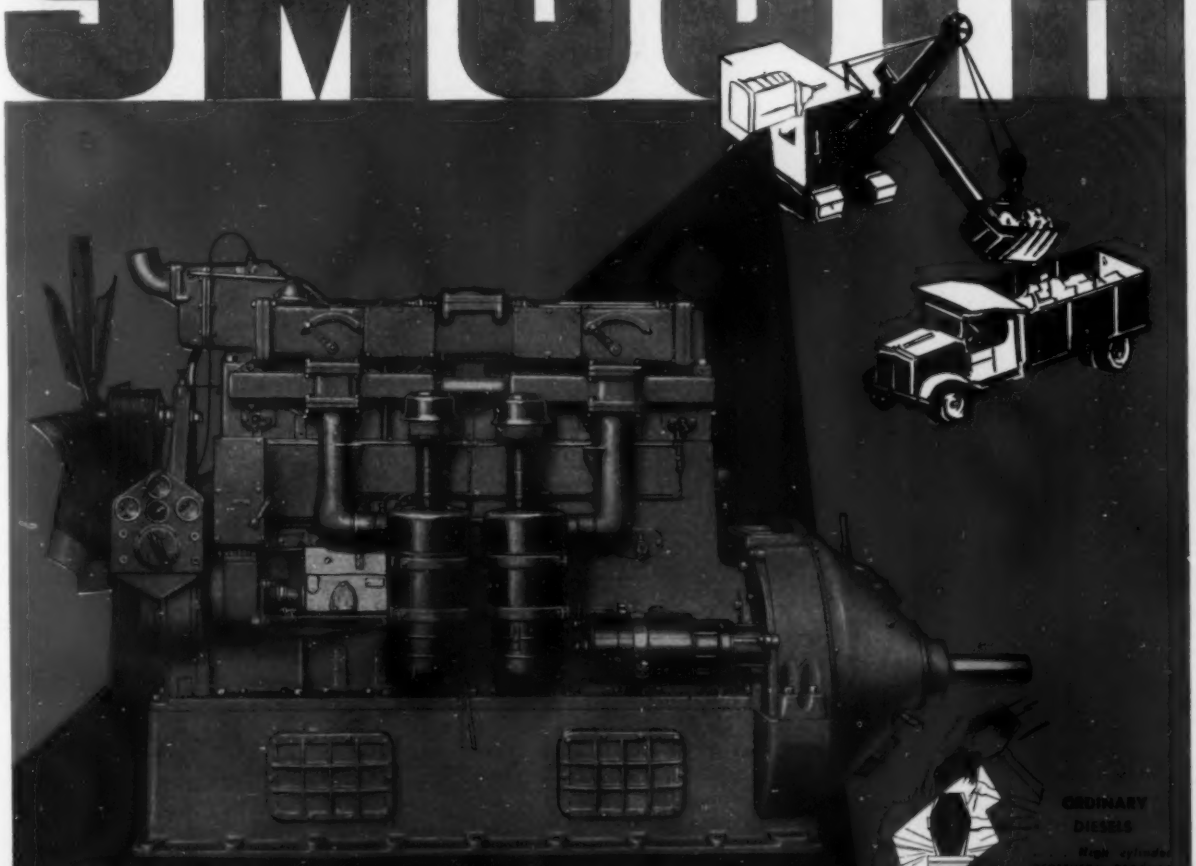



Fig. 1-B, right: Front view shows the pulp flow through machine indicated by arrows. Note the pulp flows over the weir and passes through the feed pipe directly on top of the impeller where air passing down the standpipe is intimately mixed with the pulp in the aerating zone. Pulp flows by gravity from cell to cell by means of impeller action

# SMOOTH

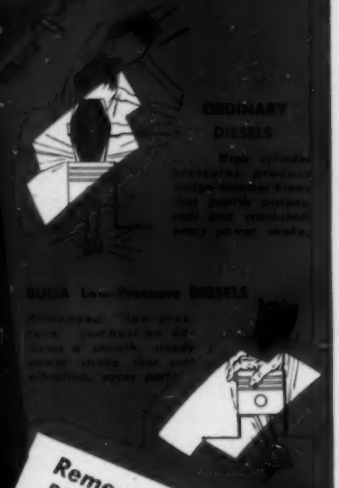


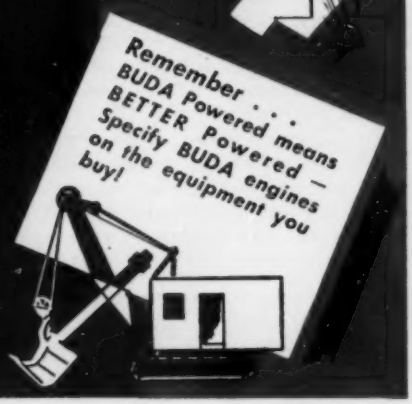
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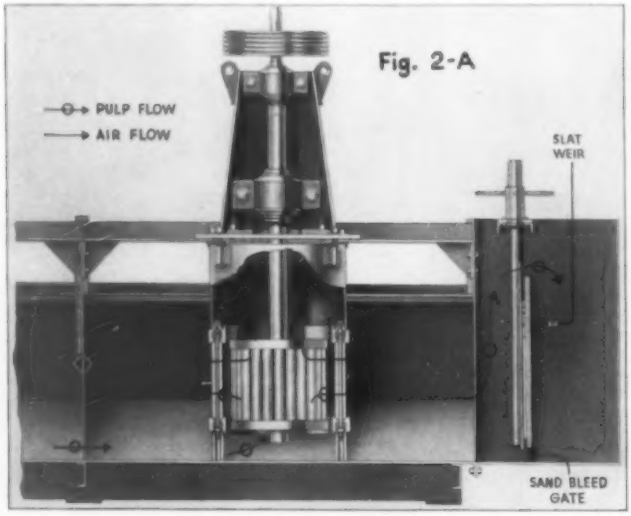



Fig. 2-A: Fagergren flotation machine of the level-cell design which may be constructed as one, two, three and four-cell units. Arrows indicate the pulp flow and air flow

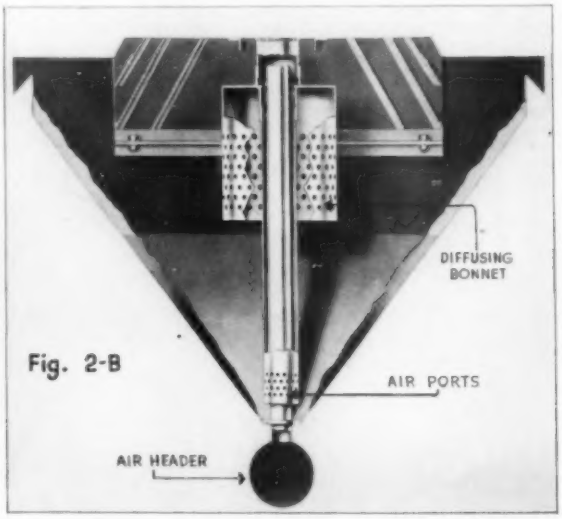



Fig. 2-B: Steffensen flotation machine is an air-agitated cell. It is of unit-cell construction comprising an inverted, pyramidal tank with rectangular top

usually in fine crystals although some rocks are composed of large crystals. To effect a physical separation it is necessary to grind the rock until a large proportion of the grains are composed of only one mineral. The grains which are composed of two or more minerals locked together are called locked or middling grains, and the minerals present cannot be physically separated. The size to which a rock must be ground to liberate the minerals from each other determines which filming process must be used for separation. Usually the rock must be ground so that it will pass a 48-mesh screen to liberate the minerals from each other and sometimes grinding it until it passes a 400-mesh screen will not liberate the minerals present. For mineral mixtures finer than 48-mesh flotation is employed. For coarse grained rocks which may be liberated at 6- to 35-mesh some form of agglomeration may be used for physical separation after filming. For still coarser grained rocks filmed particles as coarse as 2½-in. may be made to adhere to a sticky water-repellent surface.[2]

Although flotation is the most widely applied of the filming processes, and was first applied commercially, agglomeration was practiced on an industrial mineral five centuries ago. According to a manuscript whose translation was published by Gaudin[3] the Persians used fatty acids and soaps for agglomeration of lapis lazuli or lazurite from azurite in the fifteenth century. Adhesion to sticky surfaces has only very limited commercial application today but the process was used twenty-four centuries ago. The ancient historian, Herodotus (485-412 B. C.) records that apocryphal virgins dipped feathers daubed in pitch into the mud of an alluvial lake, and particles of what may be facetiously called virgin gold adhered thereto.[4]

Thus the prior and more extensive application of flotation did not depend on its invention but upon the greater need for a process which would treat all rocks, including those which liberate their minerals only when finely ground. The subsequent and limited commercial application of the filming processes for coarser grains was not delayed by its technology, but by the smaller number of rocks containing useful minerals which could be treated in the coarse sizes.

Extensive commercial application of filming processes in the author's opinion has been handicapped and delayed by patent litigation, and by royalty rates which made the use of these beneficiation processes uneconomical in certain border line cases.

Flotation was first applied commercially to sulfide minerals which were used for the production of metals. This is still, on the basis of tonnage of rock treated and value of products, its principal application, but its application to the beneficiation of industrial minerals is rapidly increasing. It is the author's hope that this article and others to follow will acquaint engineers and executives with its possibilities, so that its more rapid application will ensue.

### Filming

Although some minerals are naturally resistant to wetting with water when their surfaces are clean, it is almost always necessary to induce a difference in wettability of the minerals present in a rock by filming with reagents. To modify the action of filming reagents other compounds or mixtures are used. In flotation a compound which reduces surface tension is usually used. This is called a frother because it permits the air bubbles to form a froth. In agglomeration an oil is usually used to build up the water-repellent film of the reagent. The filming agents (collectors) are grouped into two general classes called anionic and cationic because they ionize to some extent to produce large heteropolar cations or anions.

By proper choice of collector and modifying agent almost any mineral may be filmed to make its grains water repellent, while other minerals present remain water-wetted. Having accomplished the filming the mixture of water-repellent and water-avid grains may be separated, according to their size by the methods described as follows:

Flotation machines are tanks pro-

[2] John Dasher, James Norman and O. C. Ralston, A.I.M.E. Tech. Pub. 1537, Mining Technol., November, 1942.
[3] E. & M. J. 141, 43-4 (Oct., 1940).
[4] Rickard, R. A., and Ralston, O. C. Flotation, Mining and Scientific Press, San Francisco (1917), p. 10.

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**2 SAVE MANPOWER.** *Only one* operator is required on the St. Regis Valve Bag Packing Machine even when it is equipped with 2 or 4 filling tubes. So simple is the work involved that it can be quickly learned and skillfully performed by inexperienced hands. Since all lifting of bags is eliminated, the machine can be successfully operated by a woman where the manpower shortage is acute.

**3 SAVE MONEY.** Installed and operated at minimum expense and eliminating the need for any closing equipment, the St. Regis Valve Bag Packer assures lasting economy. Its outstanding service record in leading rock products companies shows 10, 15, 20 and 25 years of unbroken use.

**4** The number of these machines available for immediate installation is limited. Should you be interested in a St. Regis Valve Bag Packing Machine, it would be wise to lose no time in communicating with our nearest office.




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vided with means of suspending fine mineral particles in water, of introducing air bubbles into the suspension, of skimming or overflowing the froth of mineral, air, and water which forms on the top, and means of allowing fresh pulp to enter, and treated pulp to leave. There are two main types of flotation machines—those that are mechanically agitated, and those that are agitated by air.

There are two main types of mechanically agitated cells in modern use. One type, of which there are many variations, may be illustrated by the Denver (Fahrenwald) subaeration cell shown in Fig. 1. The impeller creates a low pressure area at the center into which air flows down a pipe surrounding the impeller shaft. Fresh, middling and recirculated pulp are mixed with the fine air bubbles which are produced in this agitation zone. These bubbles rise through the quieter suspension above the impeller hood. As they rise they encounter water-repellent grains which adhere to the bubbles to decrease the proportion of their water-repellent surfaces which are wet by the water of the pulp. The bubbles rise and carry the water-repellent grains to the surface. Here the froth drains and entrapped particles have a chance to reenter the pulp. At the side of the cell there is a still quieter area for froth drainage. This is provided by a baffle and is called a spitzcasten, or spitz. Here the froth is raked off. The pulp containing water wetted grains overflows a wier at the side of the cell continuously. The height of the wier is adjustable so that the depth of the froth layer may be controlled.

Another widely used type of cell is the Fagergren machine (American Cyanamid) shown in Fig. 2-A. The impeller consists of a group of vertical rods held in a circular frame which rotates inside of a stator of similar construction. Rotation of the impeller creates a low-pressure area in the center of the cage. Air flows down a pipe around the shaft and is mixed with pulp from the cell which flows up through the bottom of the impeller cage. As in the Denver machine the small air bubbles rise and encounter water repellent particles which adhere to the bubbles and are carried to the surface where they form a froth which is skimmed off at the edge of the cell.

The Denver type cell will pump the overflow from one cell into the next so that a series of cells may be mounted on the same level. In the Fagergren cell the overflow is not pumped but flows by gravity so that each cell or pair of cells must be mounted lower than the preceding cell or cells. This is not particularly important in large installations.

Of the air agitated cells there are three main types—the mat cell such as the callow cell, where air is introduced through a porous bottom, the rotating mat cell such as the MacIntosh cell where air is introduced through a rotating cylinder with a porous surface, and the air lift cell such as the Hunt cell where air is introduced at the end of many small pipes extending down into the cell. Air agitated cells have seldom been used on industrial minerals, and the first two types are no longer in extensive use. Another air-agitated cell is Fig. 2-B, the Steffensen (American Cyanamid).

Air lift cells of the Hunt type shown in Fig. 3 are well adapted to the production of a rough concentrate. They can easily be constructed of wood or wood and concrete (except for the air pipes) and therefore may find an increased use on industrial minerals due to wartime priorities. The cell consists of a long V-shaped trough in which there is a row of small pipes between two vertical baffles under a deflecting hood. The air bubbles, some of which are small, and some of which are large, perform a double function. The large bubbles rise rapidly between the baffles and provide agitation of the pulp, while the small bubbles rise more slowly, and the water-repellent grains adhere to them and are carried out under the hood and over the edge of the cell.

### Agglomeration Processes

Agglomeration processes are used for material between 6 and 65-mesh. The rock containing two or more minerals is treated with the same collector and modifier which would be used for flotation if it were more finely ground. No frother is required. The addition of an oily substance to reinforce the water-repellent film formed is usually helpful. After and during filming and oiling, air is introduced by mixing. The large grains agglomerate into

*(Continued on page 81)*

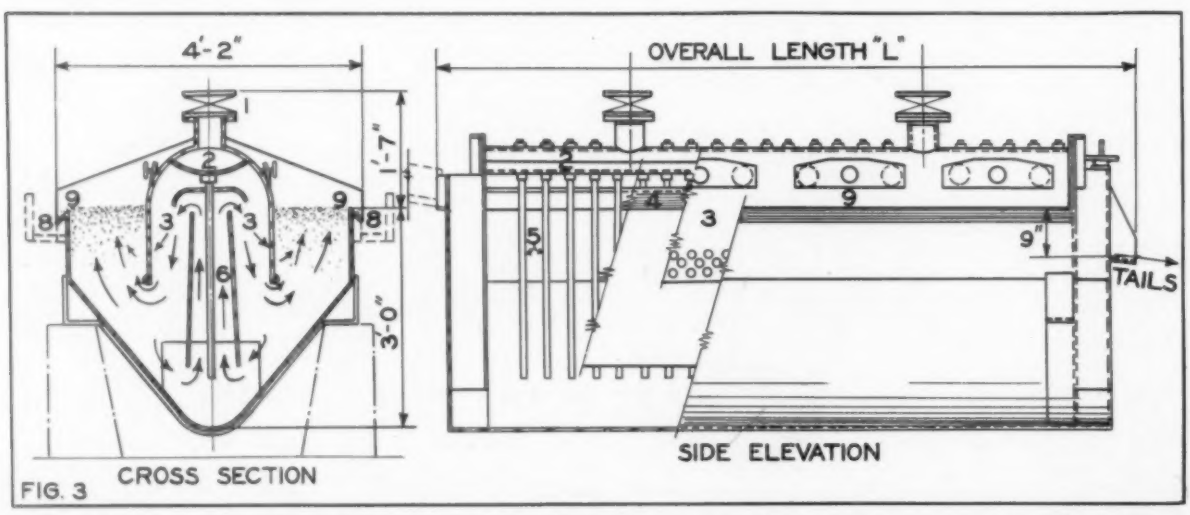
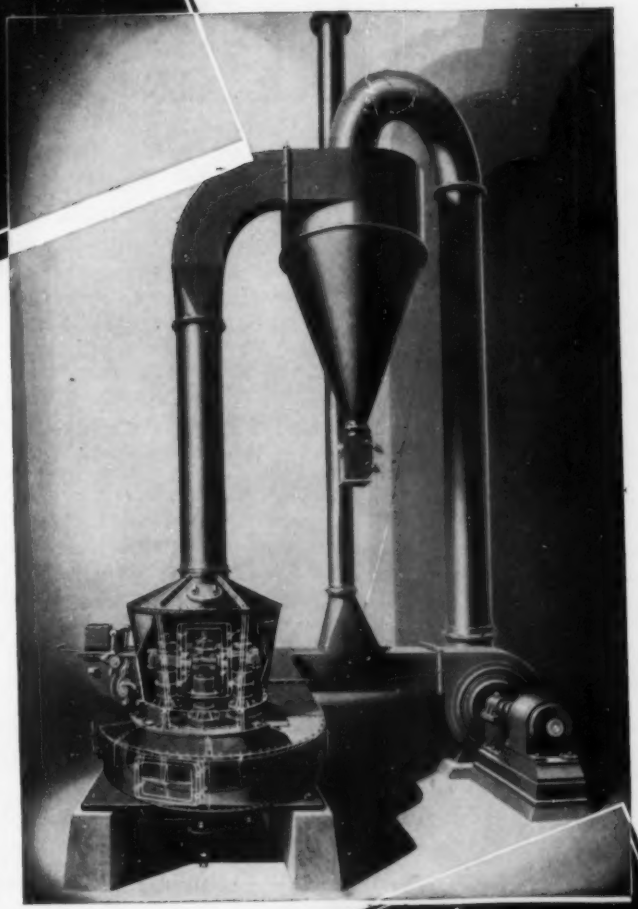



FIG. 3

End and logitudinal view of Hunt type (Southwestern) air-agitated cell. 1. Air control valve. 2. Air header. 3. Baffles. 4. Deflector. 5. Down pipes. 6. Air lift chamber. 7. Spitzkasten. 8. Launders. 9. Froth overflow lip

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*Self-lubricating oil journals*, plus high grade bearings and well balanced, sturdy construction, contribute to long service life and low operating costs.

* * *

Low Side Roller Mills are economically adapted for pulverizing phosphate rock, gypsum, limestone, barytes, bauxite, bentonite, clay, langbeinite, and other non-metallic minerals. They are built in several sizes with capacities up to forty tons per hour for the Super Roller Mills.

These mills may be used for drying and grinding in one operation by introducing heated air into the mill system for evaporating surface moisture from the material, as in drying and pulverizing coal.

**An Economical Producer for materials pulverized to medium fineness from 60% to 95% minus 100-mesh**

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# Reinforced Brick and Concrete Substituted for Steel Kiln Shells

By VICTOR J. AZBE*

About a year ago an inquiry came to this office regarding the use of silo concrete staves for kiln shell construction in lieu of the unobtainable steel. Knowing the strains occurring in the kiln walls through expansion by heat and through shock when the charge drops after a good hang-up, and remembering the many kilns we have seen with ruptured shells and sheared rows of belts, we immediately discouraged the idea with the statement that steel should be secured by all means, and if new was not obtainable, then old steel should be used.

Some time later an order came through from Rio de Janeiro, Brazil, for the designs of our medium size kiln with integral gas producer. After drawings were made and sent, information was cabled back that in Brazil there is such a scarcity of steel that the 10½ tons sufficient for the shells of kiln and producer would cost $9,080 new, while an American quotation received at the same time for new shells from the same specifications, rolled to shape but not erected, called for only $2,120.

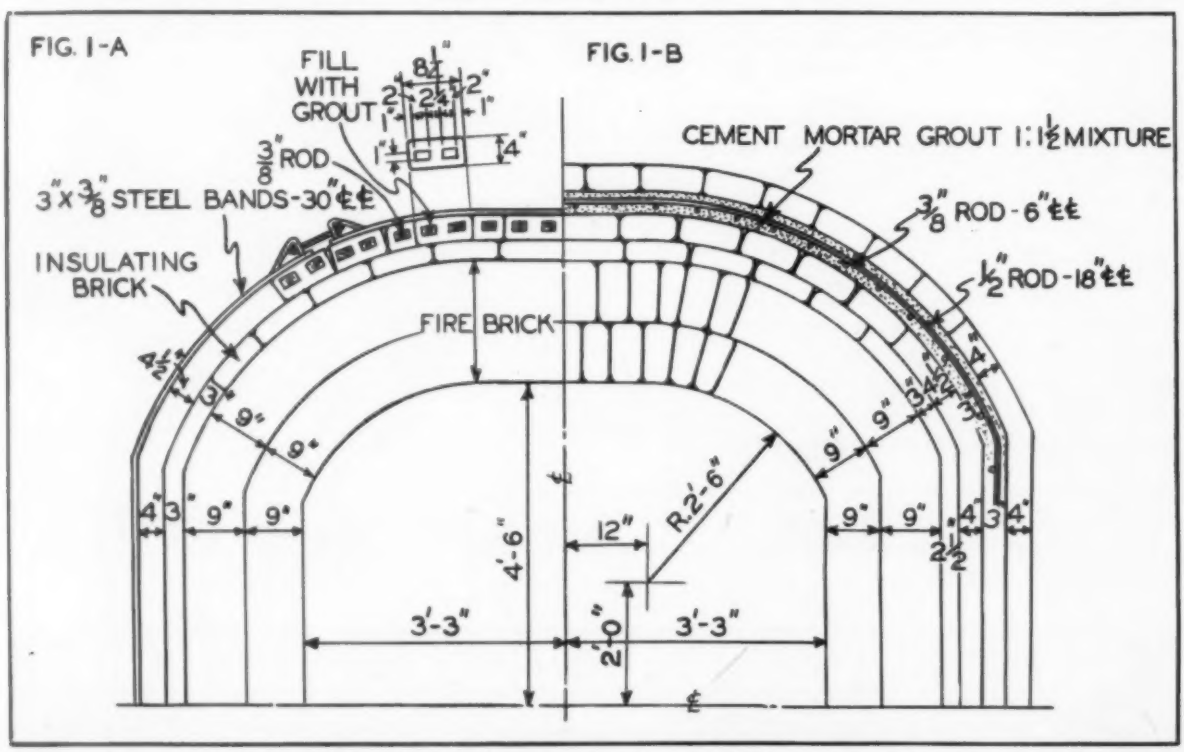
As it later developed the Brazilians were able to obtain some second hand steel for a sum somewhat lower ($6,000) but before that information came to us we started designing a kiln shell which would contain the very minimum of steel.

Of course steel is best but when steel is not obtainable, resort may be made to substitutes. While one could utilize the old style massive stone construction that, in addition to being clumsy and impracticable, also would be costly, in these days of high labor rates.

Therefore two systems of construction, economical in ferrous materials were evolved. They are shown on Fig. 1—"A" and "B". Design "A" consists of brick walls reinforced with steel bands, while "B" is brick-faced, reinforced concrete. Both sketches also show the usual internal fire brick lining, common to these kilns whether steel or other construction.

Of the two designs, "A" is the simplest and probably the best but requires specially perforated red brick. Only about two tons of rods and bands would be needed. The rods pass through the brick, lining them up and keeping them in line, while the bands securely tie everything together. The face brick are

*Consulting engineer, St. Louis, Mo.




Two Azbe designs of shaft kilns which largely eliminate the use of steel, except minimum requirements for reinforcement. Fig. 1-A calls for the use of brick with provision for reinforcing rods. Fig. 1-B is of reinforced concrete between walls of brick

best grade of common red hard-burned brick. At present such brick with round holes, that aline in a straight wall, are available, but the design shows slots in the brick which permit turning of circles without chipping edges, although the former may, with some trouble, be adopted.

Behind the outer wall proper there is a 3-in. row of insulating brick placed there as much to take up some of the expansion strain from the outer wall as to insulate it against heat loss.

In building, both the outer shell wall and the inner fire brick wall would be carried up together. At the poking openings the door frames would be bolted to the bands.

The "B" system was evolved from standard methods of chimney construction. It is reinforced concrete between two walls of red brick. It is still cheaper because standard brick is used and not special brick as in design "A".

The prices at the present time would compare about as follows: Kiln shell 10- x 12- x 40-feet: Steel shell kiln only, $1,600; reinforced special red brick, $575; and reinforced concrete, $525.

## Italian Puzzuolanas

*(Continued from page 64)*

Naples as conquerors, will have an opportunity to see how both ancient and modern concrete construction has resisted bombing.

The Italians have used puzzuolana cements right down to the present time for similar construction. The accompanying views were made in 1938. It is usually claimed by cement experts that the mild climate of Italy has something to do with the long life of its seawater concrete structures, but in view of American experience with concrete dams in climates just as mild, it is hoped that American Army engineers will be favorably impressed with puzzuolana cement.

This part of the cement industry has never received the serious attention of American cement manufacturers that it deserves. While there are no deposits of volcanic ash from Mt. Vesuvius in America there are undoubtedly many similar deposits of puzzuolanas. And the Romans used pulverized burned clay as a puzzuolana. The subject ought to be of particular interest at this time when engineers are beginning to find out that inclusion of a puzzuolana evidently prevents chemical reaction between silicious coarse aggregates and "high alkali" cements.


# *Amsco Dipper Aids* in the Rapid Construction of Ordnance Depot

In the recent construction of a mountain-state ordnance depot, plans called for 800 concrete igloos, 60 and 80 feet in length. As the depot was urgently needed, all work was performed at high speed with the production of concrete exceeding 4,000 cubic yards a day. A huge "thermometer" showed the daily progress, and every man was determined that the best records for that class of construction would be bettered.

To load the gravel, which was available in the locality, two power shovels, one of which is shown below, were used. This shovel is equipped with an Amsco Renewable Lip Dipper. By working the faces to a height of 15 to 18 feet, the gravel was well mixed as to sizes when loaded onto the trucks which rushed it to the crushing plant.

Running true to form, the Amsco manganese steel dipper, designed for faster digging and fuller loads, gave trouble-free performance throughout the construction period.

On important jobs and where the service is unusually severe, Amsco renewable lip dippers will usually be found. Being made of tough, work-hardening, austenitic manganese steel, the greatest service life and freedom from breakage is a foregone conclusion, among power shovel operators who are acquainted with Amsco dipper features.

Amsco Renewable Lip Dippers (U. S. Patent 1,945,064) are made in all sizes from ¾ yard capacity, with bail and back lugs arranged for any type of dipper stick.

Ask for Dipper Bulletin 641-D.



*Showing reinforcing ribs on lip and front which cut overall weight and give necessary shock and stress resistance.*



*Photo courtesy of Contractors & Engineers Monthly.*

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# Proportioning a Cement Raw Mix

**Method based on control of three constituent materials in cement clinker**

By JOHN A. SHANKS

A METHOD of proportioning a cement raw mix from three or four raw materials has been devised. It is based on simple premises and does not contain empirical relationships. Its accuracy depends only on the variation of the raw materials. Naturally if the raw materials vary within a wide range the proportioning becomes exceedingly difficult, no matter what method is used.

The method is based upon control of three constituent materials in cement clinker, namely, CaO, $SiO_2$ and $R_2O_3$. The assumption is made that three materials are available, each material being high in one of the three constituents. For example, there is available (1) limestone, high in CaO; (2) silicious material, high in $SiO_2$; (3) a third material, high in $R_2O_3$. Disregard small amounts of impurities such as alkali, $MgCO_3$, $TiO_2$, etc. These must necessarily be present only to a small extent in order to make good cement. If two raw materials will furnish the proper amounts of clinker constituents, the third material is unnecessary. However, it is often economically desirable to use a raw material even though it is deficient in one constituent, so that a third material must be added in order to make up this deficiency.

Only two requisites are necessary in order to make the calculation. One is the analysis of all raw material (dry basis) going into the mix. The other is the theoretical analysis of the clinker desired; i.e., allowance being made for changes in clinker constituents due to fuel and any other contaminants.

It is assumed that all $SiO_2$ and $R_2O_3$ present in the raw material proceeds unchanged in amount into the clinker. The $CaCO_3$ of course loses $CO_2$ and goes into the clinker as CaO. Therefore a given quantity of $SiO_2$, $R_2O_3$, and $CaCO_3$ will make a definite quantity of $SiO_2$, $R_2O_3$, and CaO in the clinker. This method is merely a simple mathematical treatment to ascertain how much of each raw material is necessary to give a desired total of $SiO_2$, $R_2O_3$, and CaO in the clinker.

An example of the method itself will prove much more explicit than any description in words.

(1) *Analysis of Raw Materials:*

| | $SiO_2$ | $R_2O_3$ | $CaCO_3$ |
|---|---|---|---|
| Constituent No. 1.. | $a_1\%$ | $b_1\%$ | $c_1\%$ |
| Constituent No. 2.. | $a_2\%$ | $b_2\%$ | $c_2\%$ |
| Constituent No. 3.. | $a_3\%$ | $b_3\%$ | $c_3\%$ |

(2) *Desired Clinker Analysis:*

| $SiO_2$ | $R_2O_3$ | CaO |
|---|---|---|
| 21% | 9% | 65% |

Arbitrarily let 9% = 100 lb. $R_2O_3$ in Clinker batch.

Then $21\% = \frac{21}{9} \times 100$ lbs. = 233 lbs. $SiO_2$ in Clinker batch.

And $65\% = \frac{65}{9} \times 100$ lbs. = 722 lbs. CaO in Clinker batch.

The $R_2O_3$ and $SiO_2$ will come unchanged from the raw material but the CaO will come from $CaCO_3$. Therefore, to find out what amount of $CaCO_3$ will be necessary to provide 722 lb. CaO, we must multiply 722 by $\frac{CaCO_3}{CaO}$.

$$722 \times \frac{100}{56} = 1280 \text{ lb. } CaCO_3.$$

Having arbitrarily set a number of pounds of each chemical constituent, we proceed to find out how much of each raw material is needed to provide that amount.

Let $x$ = lbs. constituent No. 1, $y$ = lbs. constituent No. 2, $z$ = lbs. constituent No. 3 in raw mix.

Then

$$\begin{aligned} a_1x + a_2y + a_3z &= 233 \text{ lbs. } SiO_2 \\ b_1x + b_2y + b_3z &= 100 \text{ lbs. } R_2O_3 \\ c_1x + c_2y + c_3z &= 1280 \text{ lbs. } CaCO_3 \end{aligned}$$

Solve these three equations simultaneously by method of determinants. To make a more general case let

$$\begin{aligned} 233 \text{ lbs.} &= k_1 \\ 100 \text{ lbs.} &= k_2 \\ 1280 \text{ lbs.} &= k_3 \end{aligned}$$

$$x = \left\{ \begin{vmatrix} k_1 & a_2 & a_3 \\ k_2 & b_2 & b_3 \\ k_3 & c_2 & c_3 \end{vmatrix} \div \begin{vmatrix} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \\ c_1 & c_2 & c_3 \end{vmatrix} \right\} = \frac{(k_1b_2c_3) + (a_2b_3k_3) + (a_3c_2k_2) - (k_3b_2a_3) - (k_2a_2c_3) - (k_1b_3c_2)}{(a_1b_2c_3) + (a_2b_3c_1) + (a_3c_2b_1) - (c_1b_2a_3) - (b_1a_2c_3) - (a_1b_3c_2)}$$

$$y = \left\{ \begin{vmatrix} a_1 & k_1 & a_3 \\ b_1 & k_2 & b_3 \\ c_1 & k_3 & c_3 \end{vmatrix} \div \begin{vmatrix} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \\ c_1 & c_2 & c_3 \end{vmatrix} \right\} = \frac{(a_1k_2c_3) + (k_1b_3c_1) + (a_3k_3b_1) - (c_1k_2a_3) - (b_1k_1c_3) - (a_1b_3k_3)}{(a_1b_2c_3) + (a_2b_3c_1) + (a_3c_2b_1) - (c_1b_2a_3) - (b_1a_2c_3) - (a_1b_3c_2)}$$

$$z = \left\{ \begin{vmatrix} a_1 & a_2 & k_1 \\ b_1 & b_2 & k_2 \\ c_1 & c_2 & k_3 \end{vmatrix} \div \begin{vmatrix} a_1 & a_2 & a_3 \\ b_1 & b_2 & b_3 \\ c_1 & c_2 & c_3 \end{vmatrix} \right\} = \frac{(a_1b_2k_3) + (a_2k_3c_1) + (k_1c_2b_1) - (c_1b_2k_1) - (b_1a_2k_3) - (a_1k_2c_2)}{(a_1b_2c_3) + (a_2b_3c_1) + (a_3c_2b_1) - (c_1b_2a_3) - (b_1a_2c_3) - (a_1b_3c_2)}$$

Finally:

$\frac{100 \times x}{x+y+z}$ = % constituent No. 1 in raw mix.

$\frac{100 \times y}{x+y+z}$ = % constituent No. 2 in raw mix.

$\frac{100 \times z}{x+y+z}$ = % constituent No. 3 in raw mix.

E.g., Special Case of Two Raw Materials:

| | $SiO_2$ | $R_2O_3$ | $CaCO_3$ |
|---|---|---|---|
| Constituent No. 1.. | $a_1$% | $b_1$% | $c_1$% |
| Constituent No. 2.. | $a_2$% | $b_2$% | $c_2$% |
| Constituent No. 3.. | $a_3$% | $b_3$% | $c_3$% |

$$a_1x + a_2y + a_3z = k_1$$
$$b_1x + b_2y + b_3z = k_2$$
$$c_1x + c_2y + c_3z = k_3$$

E.g., Special Case of Four Raw Materials:

| | $SiO_2$ | $R_2O_3$ | $CaCo_3$ |
|---|---|---|---|
| Constituent No. 1.. | $a_1$% | $b_1$% | $c_1$% |
| Constituent No. 2.. | $a_2$% | $b_2$% | $c_2$% |
| Constituent No. 3.. | $a_3$% | $b_3$% | $c_3$% |
| Constituent No. 4.. | $a_4$% | $b_4$% | $c_4$% |

Constituent (50% No. 3 + 50% No. 4)

$$\frac{a_3}{2} + \frac{a_4}{2} = a_5\%$$

$$\frac{b_3}{2} + \frac{b_4}{2} = b_5\%$$

$$\frac{c_3}{2} + \frac{c_4}{2} = c_5\%$$

$$a_1x + a_2y + a_5z = k_1$$
$$b_1x + b_2y + b_5z = k_2$$
$$c_1x + c_2y + c_5z = k_3$$

In actual practice a raw material analysis might be as follows:

| Constituent | $SiO_2$ | $R_2O_3$ | $CaCO_3$ |
|---|---|---|---|
| No. 1 ..... | 6.04% | 1.56% | 89.0% |
| No. 2 ..... | 68.61% | 19.55% | 3.41% |
| No. 3 ..... | 2.90% | 91.8 % | 0.96% |
| Here | 6.04% = $a_1$% | | 68.61% = $a_2$% |
| | 1.56% = $b_1$% | | 89.00% = $c_1$% |

Logarithms can be used to carry out the calculations. If a negative answer is obtained, the materials cannot be used together to obtain the desired clinker analysis.

This method may also be applied to another type of problem. If a rock slightly too high in $MgCO_3$ overlies a low magnesia rock, it would be desirable to use part of the former blended with the latter rather than throw away the overlying rock altogether. Provided that the $SiO_2$ and $R_2O_3$ could be properly taken care of by a third constituent, it would then be possible to set up, for example, $SiO_2$, $CaCO_3$, and $MgCO_3$ as the three variables, limiting the MgO in the clinker to the desired value, and obtain a blend which would correct for MgO. No experimental work has been done with this type of problem.

The author wishes to thank the members of the chemical and engineering departments of the Louisville Cement Corporation for their coöperation and interest in this work.

## Flotation

*(Continued from page 76)*

clusters around small bubbles of air. This mixing may be carried out in a conditioner with a powerful stirrer, in a tumbling barrel or in an air-agitated device.

After mixing, the light clumps of particles called agglomerates of floccules may be separated by any of several methods. In some cases air is not mixed in until the filmed material is being separated, so perhaps agglomeration is a misnomer, but in all the processes described below, coarse water-repellent grains are separated in water from water-wetted grains without being suspended in a pulp, and without being lifted to the surface by air bubbles to form a stable froth.

One of the agglomerate processes uses a hydraulic table, the floccules are lightened by air bubbles, and are larger than water-wetted grains, so

*(Continued on page 82)*





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that they are discharged on the long side of the table where tailings are usually formed in gravity tabling. Many of the water-repellent particles or groups of particles in passing over a riffle reach the surface where they float and are rafted rapidly across the table on the flowing water film.

Other machines have been especially designed to effect a separation of coarse particles according to their wettability.[5] The coarse particles are sprayed with water jets and are washed or floated over the edge of the belt, because they are lighter and larger, and because they raft over with the flowing film as in the tabling process. The water-wetted particles are plowed back into the center of the belt and are carried through the machine.[5]

Another machine[6] utilizes the same properties to effect a separation in a different manner. The coarse light agglomerates fall slowly onto the submerged screen and do not pass through, while the heavier finer water-wetted particles fall more rapidly and do pass through the screen. Of course, a vibrating screen would destroy the loosely banded agglomerates so that the whole feed could be made to pass through the screen, so perhaps it may be inefficient screening, but an efficient separation is obtained.[6]

Another newer process for the separation of selectively filmed mixtures of coarse mineral grains is now available. In this arrangement process air is introduced through a mat as in the old callow cell, but only a shallow rapidly moving stream of water and mineral is present. The air bubbles stratify the grains rolling down the slope so that the filmed grains are buoyed up to a top layer, and some are floated for an instant. The stratified layer and the temporarily floated grains are skimmed off and the water-wetted grains roll under the skimmers.[7]

[5] Fig. 1: U. S. Patent 2,047,773—7/14/36.
[6] U. S. Patent 2,113,727—4/12/38; also Rock Prod. 43, No. 5, 1940, pp. 26-29 and 40.
[7] U. S. Patent 2,267,496—12/23/41.

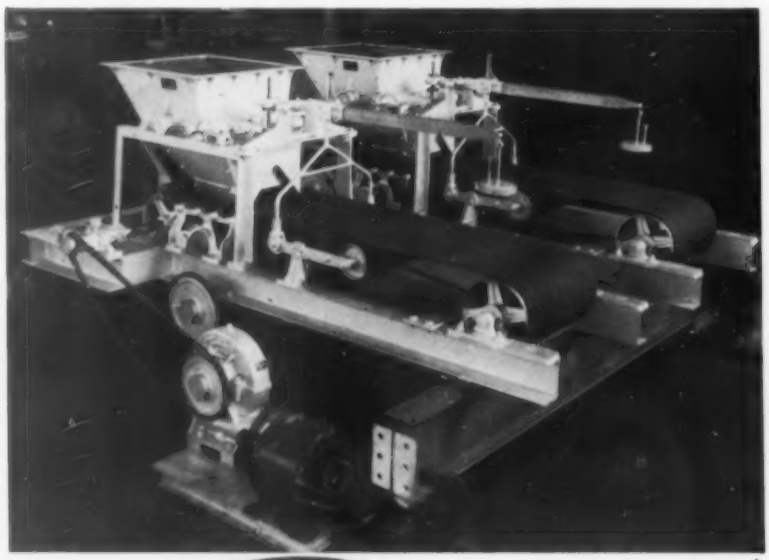
### Sticky Surface Concentration

Particles which are too coarse to be treated by the above processes may be separated by the adhesion of selectively filmed water-repellent grains to a sticky water-repellent surface. Diamonds, which are naturally water-repellent are concentrated by passing the disintegrated blue ground over tables covered with grease. Separation of filmed grains by adhesion has been the subject of the patents of Luckenbach and of Bierbraner. A continuous laboratory machine for separating grains up to 2½-in. has been developed.

### Conclusions

For the physical separation of the different minerals found in rocks to prepare a product which is richer in the valuable mineral, various filming processes are available. By proper choice of a polar-nonpolar organic compound called a collector, and of modifying agents, almost any mineral or minerals may be filmed so that grains are water-repellent. Before filming, however, the rock must be ground so that almost all of the particles consist of one and only one mineral, so that a good physical separation is possible.

Most rocks require relatively fine grinding to liberate the minerals from each other. For these flotation machines of the mechanical or air-agitated type will separate the filmed water-repellent grains from the unfilmed water-wetted grains by passing air bubbles through the suspension to which the water-repellent grains adhere and are carried to the surface to form a froth which is removed.

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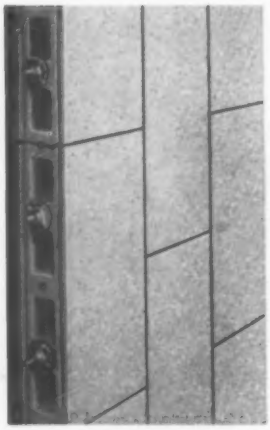
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As shown in the illustration, the concrete board, as it is called, is an

*(Continued on page 88)*




An attractive advertising folder in two colors shows construction and installation details of concrete silo staves

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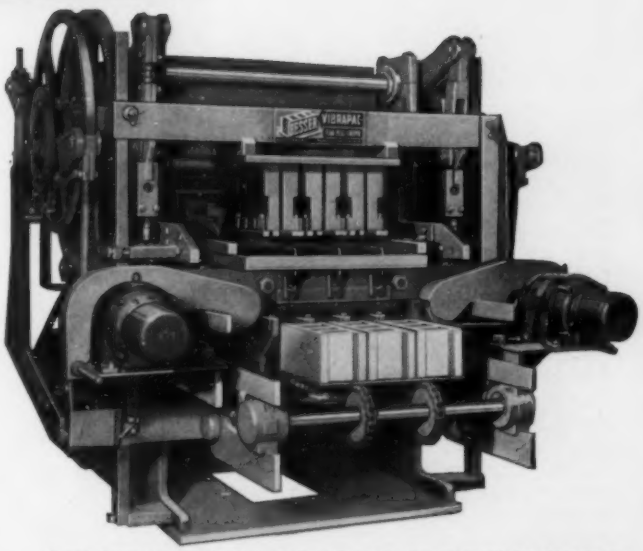

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# Expanding Sales Through Dealers

## Little Rock Lumber and Coal Co., Alma, Mich., installs high production equipment to manufacture cinder concrete block

By W. B. LENHART

THE Little Rock Lumber and Coal Co., Alma, Michigan, did not let the fact that they were located in a small town deter them from becoming a factor in the merchandising of concrete block and other building materials throughout central Michigan.

For one thing they were centrally located, for if one were to draw a vertical line through the center of Michigan and another line horizontally through the center, the intersection of the two lines would be at Alma. The district to the north of the horizontal line is comparatively sparsley settled with farming and resorting the predominant activity. South of that line are centers of some of the heaviest concentration of industry in the United States. By a vigorous sales campaign, coupled with the availability of first class manufacturing equipment to make good blocks at low cost, the company has been able to ship into Detroit, a distance of 135 miles; into Grand Rapids, a distance of 84 miles; and to the north into Traverse City, a distance of 160 miles, in spite of the fact that all of these cities have large concrete block plants. Another reason for this is that near Alma, the company has an ample supply of washed cinders that are very low in lime and sulphur so that excellent blocks are manufactured.

An example of how this company operates is given herewith. When oil was first discovered in Michigan the company saw possibilities of selling drilling mud, cement and heavy timbers for drilling rigs. An oil well supply depot was established at Reid City, Mich., where a company representative is on duty 24 hours out of the day for oil operators. When they want something, they want it NOW and not a few hours hence. This same brand of service is noticed in the selling of concrete blocks; namely, to have the material on hand and deliver with extreme promptness. Tied in with this oil business they noted the need of cheap and quickly built houses for the oil well workers—transients by necessity, so the company designed, built and marketed a pre-fabricated house that is built in eight sections The house is 16 x 22 ft. and can be assembled in one day by the use of a few 4-in. lag screws. And what is still more important, the house sells for as low as $275; if lined with Celotex, the cost is only $380. Naturally some concrete blocks find their way into the units as foundation pieces. When the house is ready to paint, the company sells them the paint, as an "extra," and even rents them the spray gun for painting the house.

At frequent intervals they make a survey of the construction needs of the district, and are very quick to change their practices to meet the



High-production block machine for the manufacture of cinder block. Note chain hoist above to handle pallets on monorail system

needs as revealed by their survey. Thus by keeping close to what is going on in the district, the company has been able to meet the changing needs.

Said Vern Kennett, vice-president of the Little Rock Lumber and Coal Co., "Besides our main concrete plant here that we built in 1942, and the supply yard at Reid City, we supply a large number of dealers working on a wholesale basis. About 85 percent of our concrete products sales are through dealers. Many of these are small concerns and only order when the need is apparent, but we have noticed that practically all of them order at least once every six months and some of them several loads each week, and their number is sufficient to keep our plant operating on a reasonable basis. Our sales have increased 40 percent during the last 20 years."

### Unusual Features of Plant

As would be expected, their plant has several unusual features: They have as a main production unit a Besser Vibrapac driven by an electric motor through a Dayton cog belt, that can turn out 600 8- x 8- x 16-in. block per hour. A Stearns machine is available for making up special sizes that are not needed in large quantities. The Besser machine uses a Besser mixer and skip for elevating the concrete to the block machine, while the Stearns unit has its mixer mounted overhead.



Air hoist mounted on overhead track to remove block from conveyor



Looking down long curing room. Chain belt conveyor transports block from block machine. Racks in curing room arranged on the diagonal

Cinders are brought in and unloaded alongside the plant and are delivered in to the plant by a Crescent scraper. They are crushed in a small set of Holland rolls; one roll is corrugated and the other is smooth faced. For elevating the cinders a slow moving, large capacity elevator of the pan type is used as it was found that faster moving conveyors wore out too fast.

Proportioning of the aggregate is done by volume. A hopper, mounted under the aggregate bins, rides on overhead rails and can be pushed to either of the mixers. Water is measured into the mixer by a Pittsburgh Equitable meter, and the operator controls the amount of water to each batch by judging the batch's consistency. Sacked cement is now used, but it is planned to use bulk cement.

In front of the Vibrapac machine is an elevated platform on which are carried all the forms used. Above the platform is mounted an "I" beam for carrying a set of chain blocks.

Probably the most unusual feature of the plant is the use of a chain conveyor for delivering the blocks to the curing room. This same conveyor is used for transporting the cured blocks to the storage yard. This conveyor is of the roller chain type and is patterned after the conveyor systems used on the automobile assembly line.

The pallets are 5/16 in. thick steel plates and are roughly 18 in. x 26 in. When the block and pallet comes from the machine it rolls onto this long conveyor that moves at low speed. The conveyor passes through a single curing room. This room will hold 6000 block. At any place in the room, the blocks can be removed from the moving conveyor by a Curtis air hoist mounted from a track-way that spans the building. The block are then placed on wooden racks for curing. At the end of the

day the room is closed, the steam turned on, and the block cured until the next day.

After curing, the block are picked off the racks by the air hoist, placed back on the conveyor and delivered to the storage yard. The steel pallets pass on to the end of the conveyor system where they are gathered up and placed on a special truck that delivers them back to the block machine. The pallets are lifted off the truck by a 2-ton Ford chain hoist and delivered to a convenient location via an over-head mono-rail.

The conveyor operates like a belt conveyor and in a straight line. To make the turn at right angles to get out of the building, the blocks and pallets skid along on rollers to their destination. The conveyor uses only 1-hp.

Mr. F. A. Linsday is superintendent of the concrete products plant.

## Concrete "Boards"

*(Continued from page 84)*

interlocking tongue-and-groove unit tied together with steel reinforcing rods, under tension, placed horizontally through the walls. Cores in the unit provide an insulating air space. Unlike construction using concrete blocks, joints are broken vertically, and no mortar is used. Corner posts are poured, binding the walls into one compact unit. Units are made in 5-in. and 8-in. heights and various lengths. The company also makes concrete joists and concrete roof slabs. Filling station and residential construction is given a finishing wall coat of stucco; plain or in colors.

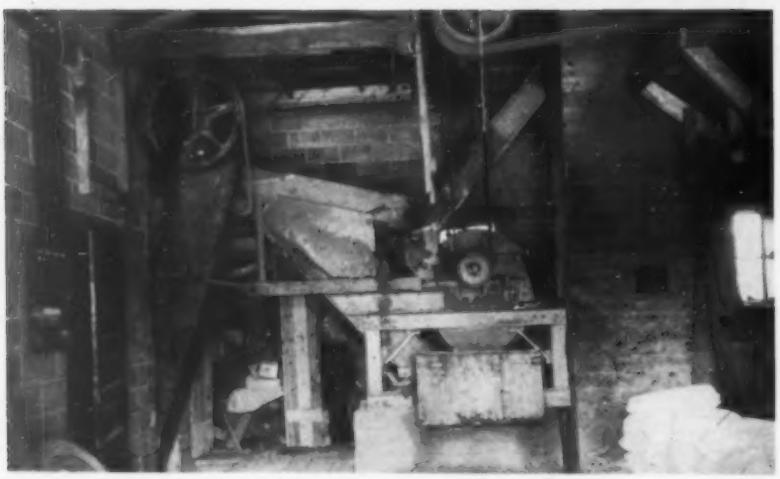
The Dodson Manufacturing Co. supplies experienced erecting crews and equipment to erect the silos, and furnishes all the accessory equipment. A distinctive advertising feature of this company is the red and white top for all its silos. The top course of silo staves alternates red and white staves.

One of the advantages claimed for a structure built with this concrete unit is that it may be easily dismantled because no mortar is used in the joints. Very often it is desired to move a filling station to a new location where a larger volume of business may be obtained. It is a simple matter to release the tension on the reinforcing rods and remove the units.

Under present conditions, the shortage of steel has made it difficult to market this type of construction but as soon as the steel shortage is relieved a large market will be opened up.

Leon and Glenn Dodson, sons of the late founder, D. W. Dodson, succeeded their father as owners and operators of the business in 1938. Clarence Stanton is plant superintendent.

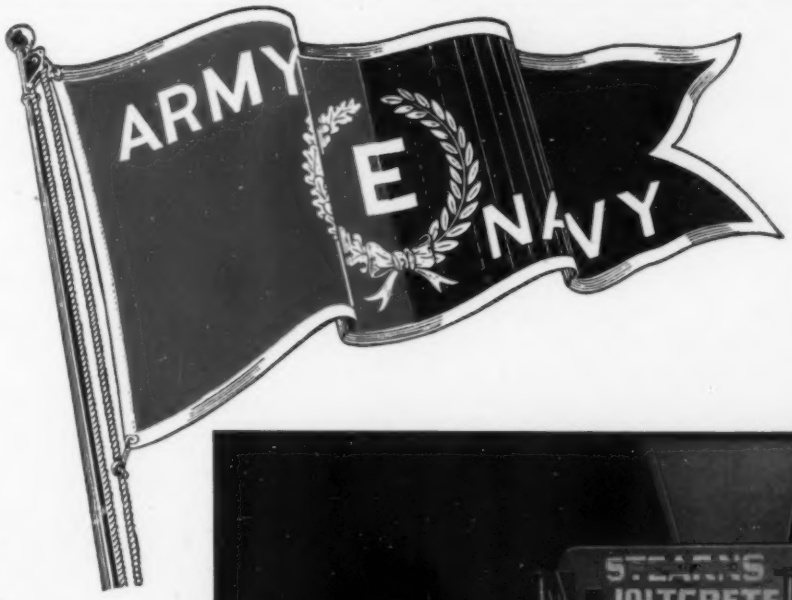




**Above: Concrete mixer and skip serving block machine. Below: Roll crusher which prepares cinder aggregate**

## Cement Concern Building Alumina Plant

MONOLITH PORTLAND MIDWEST CO., Los Angeles, Calif., has made arrangements to construct and operate the first unit of an alumina plant near its Laramie, Wyo., plant site. The initial unit is expected to cost $4,000,000 and will be completed for operation within a year. Ten units of the plant will ultimately be built. The plant, it is said, will produce alumina from anorthosite by a secret process which the Monolith company, cooperating with the Bureau of Mines, has developed in an experimental plant. It is reported that the company has almost unlimited quantities of raw materials for this process. The daily production from the first unit is estimated at 60 to 75 tons of alumina which will be shipped to the northwest to be reduced to aluminum metal. The residue, after extraction of the alumina, will be used for the manufacture of cement. Anorthosite is mainly a basic feldspar known as labradorite, and is a calcium-aluminum silicate.







This Model 7 Joltcrete makes six 8x8x16-in. concrete blocks per minute. Handles all types of aggregate with equal facility. Other models of larger capacity. Write for folders.

# First in the field to win the "E" award

The production skill and ability that won for Stearns employes the first Army-Navy "E" awarded to any plant in the field of concrete products machinery are the same skill and ability that have made Stearns concrete block machines, mixers and skip loaders preferred equipment wherever quality concrete masonry units are manufactured.




# STEARNS

**MANUFACTURING CO. - ADRIAN, MICH.**

GENE OLSEN, PRESIDENT

Although now operating 24 hours a day, 7 days a week on war material, we are able to supply concrete machinery for necessary construction work. Licensed under the basic Gelbman vibration patents.

# Concrete Block for Defense

## Economy Block Co. promotes the sale of concrete block for protection against sabotage

MILWAUKEE, WIS., is considered a good "concrete products city." Numerous plants are located here and most of them are reasonably busy, although the peak of defense construction has passed. The rest of this season will probably be considerably below normal. This falling off has caused management of concrete products plants to look about for new uses of concrete block and new items to manufacture.

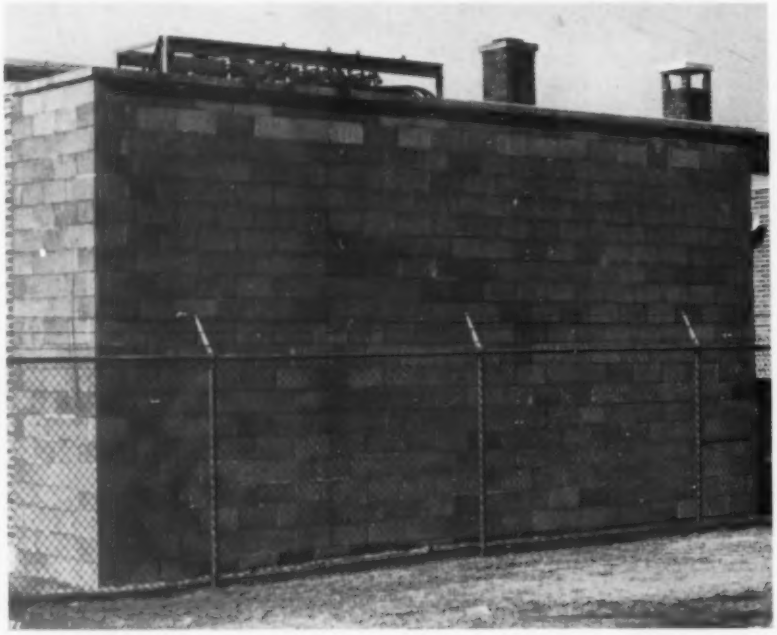
The Economy Block Co. of Wauwatosa (Milwaukee suburb) has put its weight behind a project to use cinder or Cellocrete block instead of sand bags for protecting vital production units from saboteurs' bullets.

It has been found, under actual fire of high powered rifles, that cinder block, sand filled, showed a maximum penetration of only three inches. On the tests the following bullets were used:

.30-40 Krag, 180 gr. core lokt
.35 Remington, 200 gr. core lokt
.32 Winchester special, 170 gr. silver tip
.30-06 steel bullet Army rifle
.38 Caliber police pistol, steel pointed

By pointing out that one well placed revolver or rifle bullet into an electric transformer, for instance, could put a plant out of commission, the Economy Block Co. has increased its sale of the lightweight aggregate

The use of cinder or Cellocrete (or similar lightweight aggregate materials) over the more conventional sand bags for such protection purposes has many advantages. These construction units give a rapid construction method that is not an eyesore. In many cases they add attractiveness to the plants where used. The costs are low and compare favorably with sand filled bags. Obviously their life is far greater and there is practically a 100 percent salvage value to the lightweight block.

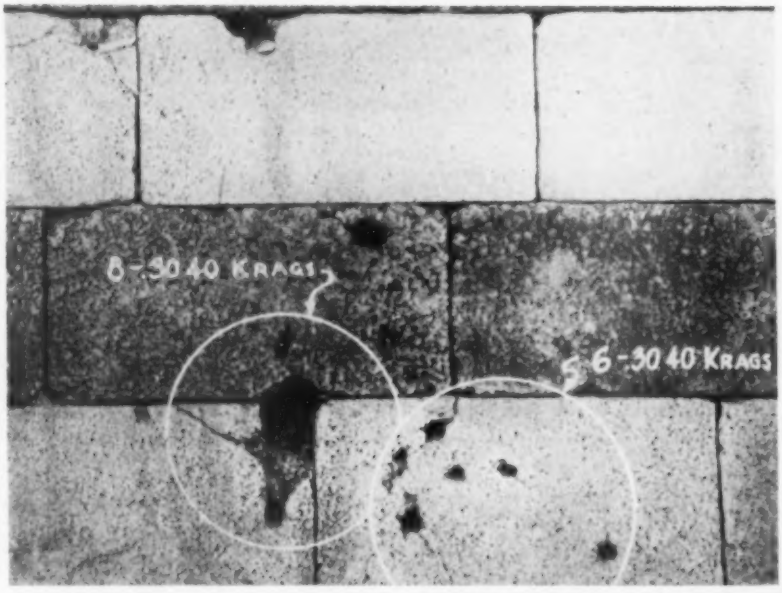


**Substation transformers protected by walls of cinder concrete block. This is a 12-in. hollow concrete masonry wall 13 ft. 8 in. high**

For this purpose it is recommended that 12- x 12-in. block with cores filled with sand, be used. However, there are many different sizes of block that could be employed and many ways of placing them in the protective walls. If no sand is used, the 16-in. block, laid sideways, is suggested to give maximum protection. The block can be laid without mortar but a thin lime-putty mortar is recommended. If desired, ventilation can be provided for by varying the arrangement of the block in the wall.

The illustrations show how transformers, generators, storage tanks, substations, motors and other exposed vital units can be well protected by the use of lightweight block.

The Economy Block Co. has found that the best way to sell and promote the use of these protective block is by personal contact. The two owners, Lester Schwalbe and William Siagert, and the sales manager, A. H. Boelk, are very active (and successful) in developing this new and novel use for concrete block.




**Close-up of demonstration wall with alternate courses of cinder block and Cellocrete laid up dry with cores filled with sand. Note that rifle bullets have not penetrated wall**

# 28,000 BRICKS IN ONE EIGHT HOUR SHIFT WITH THE J&C BRICK MACHINE



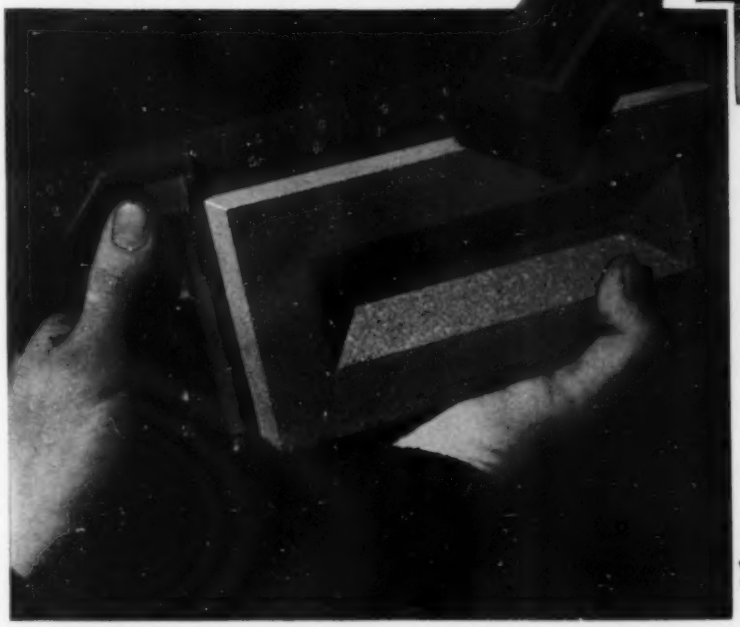
Either frog-type or solid concrete bricks can be produced at the rate of up to 14,000 in an eight hour day (on model C machine shown here) or up to 28,000 per day on the larger type A machine.



Smart operators find Jackson & Church units to be highly profitable installations. They eliminate the need for costly pallets. Gravel pit fines are ideal for brick making in a J & C press.

Below: Because of their even texture, sharp, square corners and perfect uniformity, Jackson-made bricks are winning the praise of contractors and architects from Maine to California.

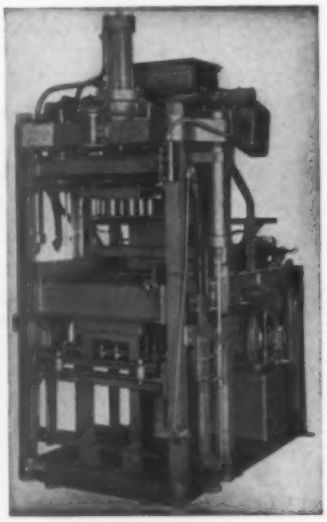


Above: The Jackson and Church plant shown above was constructed of J & C made bricks. Producers find that J & C made bricks are easier to sell because of their uniformity, quality and appearance. J & C units produce plain or colored bricks from Haydite, Waylite, Superock, Pottsco, cinders and other light weight aggregates. From a single sack of cement, with a J & C machine, up to 320 concrete bricks can be made, with strengths as high as 3700 pounds per square inch and absorption as low as 6%. For complete information write to Jackson and Church Co., Saginaw, Mich.

JACKSON AND CHURCH COMPLETE BRICK-MAKING PLANTS

**HYDRAULIC VIBRA-PRESS**



A High Production Machine Making Blocks which are Demanded by the Contractor Endorsed by the Architect Desired by the Mason

**The KENT MACHINE CO.**
CUYAHOGA FALLS, OHIO






**"ANCHOR"**

***Complete***

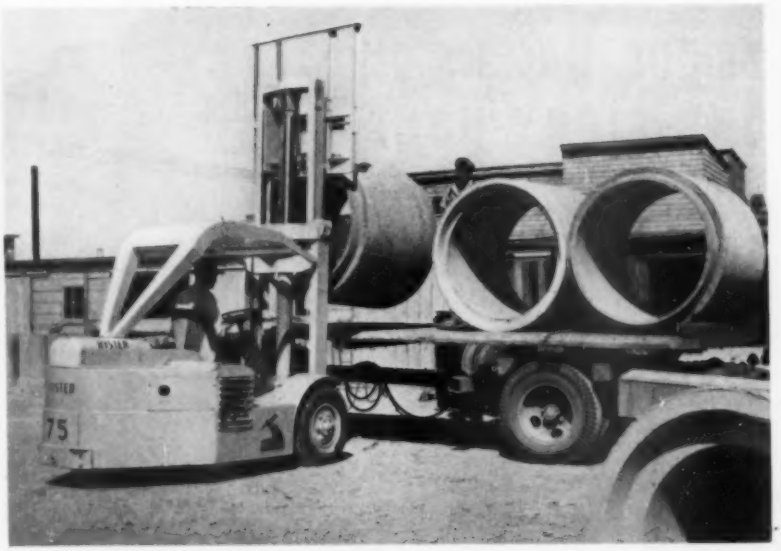
**EQUIPMENT AND ENGINEERING SERVICE**

Equipment for all phases of manufacturing concrete cinder block and other lightweight aggregate units. Our engineering service for new plants and modernizing old ones will help you operate more economically.

**Hobbs block machines, Anchor tampers, Anchor Jr. strippers, Stearns power strippers, Stearns Jolterete, Stearns mixers, pallets, Straubiox Oscillating attachments, etc.**

**Repair parts for Anchor, Ideal, Universal, Stearns, Blystone mixers and others.**

**Anchor Concrete Mchy. Co.**
G. M. Friel, Mgr. COLUMBUS 8, OHIO

Demonstrating lift truck in the yards of Oregon Culvert & Pipe Co., Portland, Ore.

## Handling Large Pipe

ILLUSTRATED in the accompanying picture is a pneumatic-tired lift truck which apparently offers possibilities for extensive mechanization of the handling of concrete pipe to the curing rooms and storage yards of concrete pipe and culvert plants. Because of its pneumatic tires it can travel over uneven ground surfaces, gravel roadways, and up grades that could not be negotiated by a solid tired machine. Large diameter pipe can be picked up from storage piles and placed on trucks for shipments without any hand-handling at all and in less time.

The truck is one size of a line of pneumatic tired lift trucks made by the Willamette Hyster Co. It is a 7500-lb. capacity unit designated as the Hyster "75" lift truck.

## Production and Shipments of Sand-Lime Brick

FIVE active sand-lime block and brick plants reported for July and four for June, statistics for which were published in August, 1943:

AVERAGE PRICE FOR JUNE

| | Plant Price | Delivered Price |
|---|---|---|
| Detroit, Mich. | .... | $16.00 |
| Saginaw, Mich. | $13.00 | .... |
| Grand Rapids, Mich. | .... | 15.00 |
| Seattle, Wash. | 16.50 | 18.50 |
| Boston, Mass. | 11.50 | 14.00 |

STATISTICS FOR JUNE AND JULY

| | *June | **July |
|---|---|---|
| Production | 954,100 | 991,340 |
| Shipments (rail) | 310,000 | 405,000 |
| Shipments (truck) | 796,720 | 509,443 |
| Stocks on hand | 289,560 | 340,225 |
| Unfilled orders | 875,000 | 1,050,000 |

*Four plants reporting: incomplete, two not reporting unfilled orders.

**Five plants reporting: incomplete, two not reporting unfilled orders.

## Concrete Block "Cleared" In Florida Collapse

FAULTY DESIGN, inadequate footings and reinforcing, and insecure subbase were the primary reasons for the collapse of the 36th Street Airport warehouse at Miami, Florida, which was constructed with concrete block. The concrete block were completely vindicated as contributing in any way to the collapse of the structure which occurred recently when a 45-mile wind and rainstorm hit this city. The ground on which the army airport warehouse was constructed was formerly swampland which until recently had been submerged under water most of the time. Foundations were not laid deep enough. To save the teeth in the trencher, the foundation was not excavated deep enough, leaving large sand pockets between other stretches where foundation reinforcement was anchored into the coral rock.

The walls of the structure were 1000 ft. long and 30 ft. high laid up with 8-in. block. In each building partition, walls of 12-in. block were located about 150 ft. apart, and the breakage looked like a lace curtain because where the partitions abutted the walls stood up. There was no reinforcing of any kind in the walls; no mortar filled columns. Apparently the mortar bond between blocks was poor. The quality of the concrete block is attested by the fact that they will be reused in rebuilding the structure.

It is incredible that any designer would permit masonry walls of this size without provision for wind loading.

## Concrete for Fontana

*(Continued from page 57)*

delivers the concrete to other belts that discharge to hoppers at the dam site and powerhouse site. Hoppers serve large capacity buckets which are hauled to the different places of pouring where cranes make the final delivery.

Concrete is sampled twice per day with 7- and 28-day, 3-month, year, and long term breaks being made and recorded. Eight sacks of cement per cubic yard gives 4500 lb. compressive strengths after one year.

All construction is under the general supervision of A. L. Pauls, chief construction engineer; F. C. Schlemmer is project manager since June, 1943, succeeding C. E. Blee, who is now chief engineer; G. E. Murphey is construction superintendent; Oren Reed is construction engineer; R. T. Colburn is construction plant engineer, and Frank Cadena is in general charge of the operation of the aggregate plant.

## War Housing Increases

NATIONAL HOUSING ADMINISTRATION has announced through John B. Blandford, Jr., Administrator, that during the first half of 1943, war housing completed totalled 281,500 dwelling units, an increase of 57 percent over the preceding six months when 179,248 units were completed. On June 30, a total of 277,000 war housing accommodations of all types was under construction.

## New Pipe Plant

U. S. CONCRETE PIPE CO. is planning to build a plant for the manufacture of concrete pipe in Relay, Md., at Washington boulevard and East street.

## Haulage

*(Continued from page 70)*

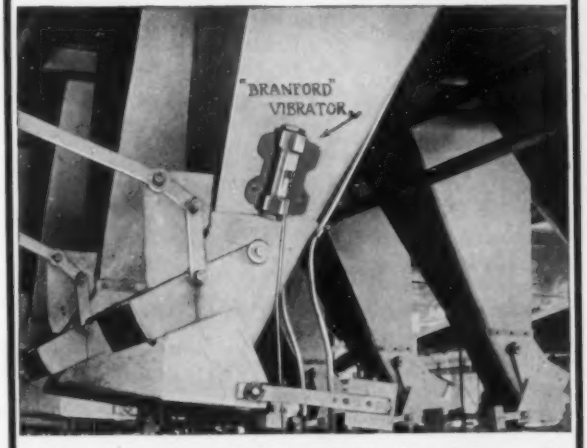
sumes 80 to 100 gal. of Diesel oil per day. The booster pump uses a 90-hp. Cummins Diesel unit that is belted to the pump by V-belts. This engine uses about 30 gallons of Diesel oil per day. The oil for this unit is the same gravity as that used on the trucks. The large unit uses an oil of higher gravity than the above as would be expected.

The plant produces about 1000 tons per day, all of which is shipped by these trucks and by smaller ordinary units not company owned. They have some 180 acres of gravel bearing ground with the bank running 80-ft. high; 45-ft. below water and 35-ft. above. A high percentage of the bank run is sand and no difficulty is experienced in maintaining enough of the smaller sizes of sand (minus 100 mesh), mainly due probably to the preponderance of fines in the original materials.

The screening and washing plant is quite simple, using a rotary double jacketed screen for sizing with the oversize returned to a 10 by 20 Allis-Chalmers jaw crusher by a bucket elevator that is in closed circuit with the crusher. The Kern system of storage is used. The ground stored material is reclaimed by a belt conveyor passing under the storage piles. The conveyor delivers to a Universal vibrating screen where the material (if gravel) is given a final rinse. The gravel then falls to steel bins serving the 40-ton trucks. The main plant is run by a 40-hp. McDeering Diesel that consumes about 14 gal. of fuel per day. Water is supplied by a 6-in. centrifugal pump driven by a small Continental unit.

During some parts of the season, stock piles can be built up, and these are independent of the regular Kern-type storage facilities. For this purpose, a P. and H. crane is used with a clamshell bucket.


**"BRANFORD" PNEUMATIC VIBRATORS**




**If you are interested in increasing the efficiency of your material handling equipment, we suggest you write us for data on our Vibrators for use on Hoppers, Bins, Chutes, Concrete Buckets, Screening Devices or in any place where bridging over or hanging up of material occurs.**
**Prevents costly damage to equipment by sledging; cuts down labor costs and increases production.**
**We also manufacture *Vibrators* for *placing concrete*— Pipe Forms, Tanks, slabs, joists, etc.**

**NEW HAVEN VIBRATOR CO.**
**145 CHESTNUT ST. NEW HAVEN, CONN.**

**COMMERCIAL PRESTEEL**




***MANY FEATURES OF MERIT IN FAVOR OF "COMMERCIAL" PALLETS***

**PERMANENT EQUIPMENT—WE DO NOT KNOW OF A PRESTEEL PALLET CUSTOMER REPLACING WITH ANY OTHER TYPE.**

**LIGHT AND EASY TO HANDLE AND STORE.**

**MAKES A FIRM ANVIL FOR TAMPING—PRESSED COLD IN DIES—UNIFORM—RECOMMENDED BY BLOCK MACHINE MAKERS—ASK US OR YOUR MACHINE MAKER.**

**MANY DIFFERENT STYLES AVAILABLE.**

**The COMMERCIAL SHEARING & STAMPING COMPANY**
**YOUNGSTOWN, OHIO.**




# Your Bond Selling Responsibilities Double!

Starting September 9th, your Government will conduct the greatest drive for dollars from individuals in the history of the world—the 3rd War Loan.

This money, to finance the invasion phase of the war, must come in large part from individuals on payrolls.

*Right here's where YOUR bond selling responsibilities DOUBLE!*

For this extra money must be raised *in addition* to keeping the already established Pay Roll Allotment Plan steadily climbing. At the same time, every individual on Pay Roll Allotment must be urged to dig deep into his pocket to buy *extra* bonds, in order to play his full part in the 3rd War Loan.

Your now *doubled duties* call for these two steps:

1. If you are in charge of your Pay Roll Plan, check up on it at once—or see that whoever is in charge, does so. See that it is hitting on all cylinders—*and keep it climbing!* Sharply increased Pay Roll percentages are the best warranty of sufficient post war purchasing power to keep the nation's plants (*and yours*) busy.

2. In the 3rd War Loan, every individual on the Pay Roll Plan will be asked to put an *extra two weeks salary* into War Bonds—over and above his regular allotment. Appoint yourself as one of the salesmen—and see that this sales force has every opportunity to do a real selling job. The sale of these *extra* bonds cuts the inflationary gap and builds added post-war purchasing power.

Financing this war is a tremendous task—but 130,000,000 Americans are going to see it through 100%! This is their own best *individual* opportunity to share in winning the war. The more frequently and more intelligently this sales story is told, the better the average citizen can be made to understand the wisdom of turning every available loose dollar into the finest and safest investment in the world—United States War Bonds.

★ ★ ★

## BACK THE ATTACK With War Bonds!

*This space is a contribution to victory today and sound business tomorrow by ROCK PRODUCTS*

# Crushed Stone Association to Step Up Promotion

THE SEMI-ANNUAL MEETING of the board of directors of the National Crushed Stone Association at Hot Springs, Va., July 30, endorsed the recommendations of a special committee, of which OTHO M. GRAVES is chairman, to expand the promotional activities of the association through the employment of an outstanding highway engineer as an association field engineer. Details will be announced later. Other business transacted included the election of WILSON P. FOSS, JR., New York Trap Rock Corp., New York City, a member of the board to succeed Stirling Tomkins, who is with the American Red Cross in North Africa. FRED O. EARNSHAW, Carbon Limestone Co., Youngstown, Ohio, was elected a member of the executive committee in the place made vacant by the resignation of Mr. Tomkins.

If nothing unforeseen intervenes it is proposed to hold the annual meeting of the association at the New Yorker Hotel, New York City, January 31, February 1 and 2, 1944. The program will be devoted chiefly to a conference on the war and post-war problems of the industry. There will be no machinery exhibit. The meeting is the week following the annual meetings of the National Sand and Gravel Association and the National Ready-Mixed Concrete Association in the same hotel.

### Engineering Activities

A. T. GOLDBECK, engineering director of the association, made his interim report on activities which include assistance in the design of both concrete and bituminous airport pavements, tests of the load carrying capacity of crushed stone pavement base, help in adoption of standard sizes of crushed stone, coöperative tests on crushed stone aggregate for concrete.

Mr. Goldbeck said many requests had been received for Bulletin 11 of the association on "The Design of Concrete for Compressive Strength, Workability and Durability." This bulletin gives a method for determining the proportions of concrete based on original research by Mr. Goldbeck in the association laboratory. He suggested that further research be carried out to see what effect the use of crushed stone sand would have. The bulletin recommends more sand with crushed stone aggregate; the original data are based on the use of natural sand.

Mr. Goldbeck also discussed the implications in the growing popularity of Vinsol resin portland cements for highway pavements. The increased workability of concrete mixes made with Vinsol resin treated cements has an important bearing on the use of crushed stone aggregate.

Another possible research activity Mr. Goldbeck said was development of a method of using damp crushed stone screenings with a small percentage of cement as base construction for pavements. He also suggested new developments in railway ballast may be in the offing.

In conclusion, he emphasized that the company salesmen of crushed stone should be carefully instructed in the use of the engineering and research data being made available to them through the association's research.

J. R. BOYD, administrative director, of the association, told of his numerous activities in assisting member companies in the solution of their individual problems with the various government war agencies. Also, he said he had used much time and effort to keep the quarry industry on the list of essential industries. In this work he expressed his appreciation of the helpful testimony of Stirling Tomkins.

Mr. Boyd referred to the field investigation by O.P.A. of crushed stone, sand and gravel prices in Florida, Texas and California, looking toward the need or desirability of a special pricing committee for these industries. The results of the investigation, he said, evidently showed there was no immediate need for such a committee, and its appointment might be postponed indefinitely.

### Agricultural Limestone Shortage

A shortage in agricultural limestone is developing, said Mr. Boyd. He believed the A.A.A. was really seriously concerned. The situation is particularly acute in the North Central area. The soil conservation program for 1943-44 is $300,000,000, which is $100,000,000 over the previous year's appropriation. Also, because of the elimination of parity payments, the funds available for agricultural lime and limestone are further increased.

Mr. Boyd said steps were being taken to form an agricultural liming materials industry advisory committee of the War Food Administration, which it is expected will help the government increase the distribution and use of agricultural liming materials.

A considerable part of Mr. Boyd's report was devoted to a discussion of post-war plans for highways and other public works. He emphasized that the basic responsibility for post-war planning rests on local officials and volunteer committees, but that post-war planning consists of more than talk about possible projects.

### Priorities - Wages

E. W. BAUMAN, chief, non-metallic section, War Production Board, was present to cover in detail recent changes in the procedure for priorities. J. A. RIGG, past-president of the association, and member of the executive committee, reported on the minimum wage hearing at New York City in May (see ROCK PRODUCTS, August, pp. 146-147). Mr. Rigg is an employer representative member of Committee 59, U. S. Department of Labor, Wage and Hour Division. The committee adopted a 40-cent minimum wage to become effective at once.

The following directors were present:

W. M. Andrews, chairman, president of the National Crushed Stone Association, Union Limestone Co., New Castle, Penn.
L. J. Boxley, Blue Ridge Stone Co., Roanoke, Va.
J. Reid Callanan, Callanan Road Improvement Co., South Bethlehem N. Y.
T. C. Cooke, Lynn Sand and Stone Co., Swampscott, Mass.
F. O. Earnshaw, Carbon Limestone Co., Youngstown, Ohio.
A. F. Eggleston, John S. Lane and Son, Inc., Meridan, Conn.
Wilson P. Foss, Jr., New York Trap Rock Corp., New York City.
J. Harper Fulkerson, Cross Engineering Co., Carbondale, Penn.
Otho M. Graves, General Crushed Stone Co., Easton, Penn.
R. P. Immel, American Limestone Co., Knoxville, Tenn.
E. J. Krause, Columbia Quarry Co., St. Louis, Mo.
J. D. Lane, Raleigh Granite Co., Raleigh, N. C.
H. E. Rainer, Federal Crushed Stone Co., Buffalo, N. Y.
Russell Rarey, Marble Cliff Quarries Co., Columbus, Ohio.
J. A. Rigg, Acme Limestone Co., Fort Spring, W. Va.
H. E. Rodes, Franklin Limestone Co., Nashville, Tenn.
James Savage, Buffalo Crushed Stone Co., Buffalo, N. Y.
F. W. Schmidt, Jr., North Jersey Quarry Co., Morristown, N. J.
O. M. Stull, Liberty Limestone Corp., Rocky Point, Va.
D. L. Williams, Virginian Limestone Corp., Ripplemead, Va.
W. F. Wise, Southwest Stone Co., Dallas, Tex.
A. L. Worthen, New Haven Trap Rock Co., New Haven, Conn.

There were a number of producers and others present as guests.

# Post-War Planning Interests Sand and Gravel Directors

AT THE SEMI-ANNUAL MEETING of the board of directors of the National Sand and Gravel Association in Cincinnati, Ohio, August 19, the main concern of the members appeared to be post-war activities, for it is anticipated that this year will about see the end of important war construction projects. The present projects seem to be in the mid-west, mostly west of the Mississippi River, and in Texas and California.

The association is in a healthful financial condition, with a considerable surplus invested in U. S. War Bonds.

### Annual Meeting in New York City

Subject to unforeseen further restrictions on railroad travel, the annual meeting of the association will be held at the Hotel New Yorker, New York City, January 25, 26, 27, with the annual meeting of the National Ready Mixed Concrete Association on January 26, 27, 28. According to present plans the National Crushed Stone Association will hold its annual meeting January 31, February 1 and 2 in the same hotel.

As usual, the program will be built largely around actual operating experience and problems of the industry. Particular attention will be given to post-war planning, as it is the opinion of such members as Robert Mitchell, Los Angeles, Calif., who have had experience on local planning boards, that much work must be done in taking projected public works "down out of the clouds to solid earth." The atmosphere is full of hazy post-war planning, but in few instances are public-spirited groups trying to make these tangible.

### Labor Problems

The labor problems of the industry today include not only shortages of labor, but hour and wage difficulties, some of which could be readily resolved except for restrictions on wage increases, etc. There is a tendency for labor union contracts in this industry to become uniform both locally and nationally, and the association is in a position to be helpful to its members on matters of wage rates and other contract terms. Secretary Ahearn advised producers, in case of new wage demands, to have the case submitted to a local panel of the War Labor Board, rather than to a conciliator, arbitrator or referee.

The new rulings of the War Manpower Commission, while adding some extra jobs to the list of essentials, make no important changes in the status of the sand and gravel industry. An essential employe can not change jobs within 30 days, except he obtain a certificate of release from his present employer. Nor should an employer hire anyone for an essential job without demanding the certificate from the former employer.

In the case of hired owner-truckers, where the Treasury Department requires they be considered employes for the purpose of social security and withholding income tax, it is necessary to allot so much for wage and so much for lease of truck. One producer assigns one-third for wages and two-thirds for truck hire.

### Priorities on Equipment

J. E. BACON, representing the Mining Division of the War Production





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★ ★ ★

EAGLE Washers are at work on wartime construction jobs all over the country and overseas.

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As a result of our pioneering efforts and wide experience in the field, there is an EAGLE unit for every washing, dewatering, or classifying problem you may encounter. EAGLE engineers have sponsored and guided the major developments in these fields.



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Board, answered many specific questions and called attention to the new form W.P.B.-2910, which must now be used for all applications for new equipment and machinery.

### Price Problems

The O.P.A. has been questionnairing the industry with the possible objective of establishing a separate price committee for the industry, which would remove the products from application of M.P.R. 188. The directors present did not appear to take any particular interest in this matter.

Secretary Ahearn explained that it is possible for producers to obtain relief from abnormally low prices by the method outlined by Neil Staebler, O.P.A., at the last January meeting of the association (see "Application of Price Ceilings in the Aggregates Industry," ROCK PRODUCTS, July, 1943). A recent such case, fixing ceiling prices for Shelby County, Tenn., producers, is given elsewhere in this issue in the special department "Washington Doings and Regulations."

STANTON WALKER, director of engineering of the association, discussed trends in specifications, with particular reference to more fines in sand. However, the thing that aroused the most interest of those present was a frank discussion of chert aggregates and possible ways to overcome its disadvantages. The opinion of those present was crystallized in a resolution which urges (1) that more attention be applied to drainage of concrete-paved highways; (2) that the slab be better designed, of greater uniform thickness, with no thickened edges; (3) that a bed of sand or pea-gravel ballast be placed under the slab to facilitate drainage.

The reason for these recommendations is that chert aggregates appear to give satisfactory service when the pavement has an adequate opportunity to dry out. Thus present pavements laid in the spring, with full opportunity to dry out and cure before winter, have better life characteristics than pavements laid in the fall. In nearly all instances of pavement failure blamed on bad aggregate, Mr. Walker said, the difficulty was in parts of the road, such as cuts, where there was obviously inadequate drainage.

### Registration

OTTO CONRADES, president and chairman of the board of the association presided. Other producers present were:

R. H. Baker, Dixie Sand and Gravel Corp., Chattanooga, Tenn.
H. N. Battjes, Grand Rapids Gravel Co., Grand Rapids, Mich.
H. R. Buchall, Ohio Gravel Co., Cincinnatti, Ohio.
H. P. Caldwell, Ohio River Sand Co., Louisville, Ohio.
Otto S. Conrades, St. Louis Material & Supply Co., St. Louis, Mo.
R. N. Coolidge, Cumberland River Sand Co., Nashville, Tenn.
F. D. Coppock, American Aggregates Corp., Greenville, Ohio.
H. S. Davison, J. K. Davison & Bro., Pittsburgh, Penn.
C. S. Dickson, Standard Sand & Gravel Co., Wheeling, W. Va.
J. H. Duffy, Ohio River Sand Co., Louisville, Ky.
Alexander Foster, Jr., Warner Co., Philadelphia, Penn.
F. C. Fuller, Portsmouth Sand & Gravel Co., Portsmouth, Ohio.
John D. Gregg, Whittier, Calif.
E. J. Halter, J. K. Davison & Bro., Pittsburgh, Penn.
G. G. Hill, G. G. Hill & Co., Dexter, Mo.
Wm. Edward Hole, American Aggregates Corp., Greenville, Ohio.
L. L. Kelly, The Bedford-Nugent Co., Evansville, Ind.
Jos. P. Lucas, Ohio River Sand & Gravel Corp., Parkersburg, W. Va.
E. R. McMillin, J. K. Davison & Bro., Pittsburgh, Penn.
Daniel J. Miller, Portland Sand & Gravel Co., Portland, Penn.
Robt. Mitchell, Consolidated Rock Products Co., Los Angeles, Calif.
G. D. Monroe, Bryan-Monroe Co., Raleigh, N. C.
H. F. Garvin Pelsue, Metropolitan Sand & Gravel Corp., Port Washington, L. I., N. Y.

*(Continued on page 98)*


# WILLIAMS *Buckets*

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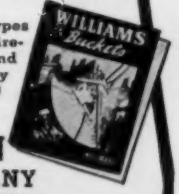


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T. E. Popplewell, Fort Worth Sand & Gravel Co. Inc., Fort Wurth, Tex.
G. W. Renwick, Chicago Gravel Co., Chicago, Ill.
J. M. Settle, Ohio River Sand Co., Louisville, Ky.
Albert R. Shiely, J. L. Shiely Co., St. Paul, Minn.
C. W. Shirey, C. W. Shirey, Waterloo, Iowa.
E. C. Smith, Jr., West Virginia Sand & Gravel Co., Charleston, W. Va.
Harris N. Snyder, The Buffalo Slag Co. Inc., Buffalo, N. Y.
Frank P. Spratlen, Jr., Spratlen-Brannan, Inc., Denver Colo.
Stephen Stepanian, The Arrow Sand & Gravel Co., Columbus, Ohio.
P. A. Yager, River Sand & Gravel Co., Owensboro, Ky.
Earl Zimmerman, Ohio Gravel Co., Cincinnati, Ohio.

Representing the Manufacturers' Division, was its chairman, Irwin W. Deister, Ft. Wayne, Ind. Representing the Ohio Sand and Gravel Association was its secretary, Claude Clark; representing The Pennsylvania Sand and Gravel Association, its secretary, Ray V. Warren.

## Research on Ready Mix Concrete

MOST IMPORTANT, PERHAPS, of the action taken by the board of directors of the National Ready Mixed Concrete Association at its semi-annual meeting in Cincinnati, Ohio, August 20, was a resolution to start research at the University of Maryland, as soon as feasible. This association has benefitted from the research work of the National Sand and Gravel Association, but it was decided that special problems of the ready-mixed concrete industry require special attention.

The recommendation was made by HARRY F. THOMSON, chairman of the research committee. It is proposed to start this research with not less than $3,000. It will be carried on in coöperation with the Stanton Walker Fellowship at the University of Maryland and under the supervision of Stanton Walker. Among the subjects to be investigated are (1) the effect of Vinsol resin on ready-mixed concrete; (2) a study of operating practices; (3) volume changes as affected by length of haul, etc.

STANTON WALKER said that based on figures from government sources, the ready-mixed concrete business in 1942 was somewhere in the vicinity of 28,000,000 cu. yd., which is way beyond any previous estimates.

### O.P.A. Pricing

V. P. AHEARN, executive secretary, said that the Office of Price Administration would soon announce a special price advisory committee of the industry to meet in September. This may take ready-mixed concrete out of M.P.R. 188 and set it up separately. Ready-mixed concrete does not come under M.P.R. 251 (construction industry).

### To Change Constitution

It was voted to prepare changes in the constitution and by-laws of the association, to provide for 21 members, one-third, or 7 members, to be elected every year, ultimately all to serve three years, although at the beginning one-third would serve one year, one-third, two years. At present there are seven directors. Provision would also be made for an executive committee of the board.

The rest of the program was a review of conditions in the industry with respect to labor, wages, hours, etc., which were comparable to those in the sand and gravel industry, which are discussed elsewhere in this issue, in a report of the meeting of the board of directors of the National Sand and Gravel Association. As noted there, the annual meeting of the National Ready Mixed Concrete Association will be held at the Hotel New Yorker, New York City, January 26, 27, 28, overlapping that of the National Sand and Gravel Association.


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MAGNESIUM PLANT



This is one of twelve 54 in. Simplex Submerged Spiral AKINS Classifiers installed by Basic Magnesium at Las Vegas, Nevada.

These machines were specially designed for dewatering magnesite concentrates and tailings. Their selection for this great reduction plant is another example of the adaptability and widening acceptance of AKINS Classifiers. . . . Write for Bulletin 24 HA — a conservative presentation of data on classification, washing and dewatering.

Lowden Dryers; Skinner Multiple Hearth Roasters; Ball, Rod & Tube Mills; Diaphragm Pumps; Smelting Equipment.

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Head, Wrightson & Co., (So. Africa) Ltd., Johannesburg.
Vancouver Iron Wks., Ltd., Vancouver, B.C., Can. - Head, Wrightson & Co., Stockton on Tees, Eng.

STEPHEN STEPANIAN, president and chairman of the board, Columbus, Ohio, presided. Producers present were:

A. C. Avril, Sackrete, Inc., Cincinnati, Ohio.
H. N. Battjes, Grand Rapids Gravel Co., Grand Rapids, Mich.
Otto S. Conrades, St. Louis Material & Supply Co., St. Louis, Mo.
Wm. Goldis, The Goff-Kirby Co., Cleveland, Ohio.
Alexander Johnson, Central Concrete, Inc., Brooklyn, N. Y.
A. W. Kimmel, Ready Mixed Corp., Dayton, Ohio.
Jas. F. McCracken, American Builders Supply Co., Louisville, Ky.
E. R. McMillin, J. K. Davison & Bro., Pittsburgh, Penn.
Robt. Mitchell, Consolidated Rock Products Co., Los Angeles, Calif.
H. F. Garvin Pelsue, Metropolitan Sand & Gravel Corp., Port Washington, L. I., N. Y.
T. E. Popplewell, Fort Worth Sand & Gravel Co., Inc., Fort Worth, Tex.
Albert R. Shiely, J. L. Shiely Co., St. Paul, Minn.
C. W. Shirey, C. W. Shirey, Waterloo, Iowa.
H. F. Thomson, General Material Co., St. Louis, Mo.
Julius J. Warner, Richter Concrete Corp., Cincinnati, Ohio.

Representing the Manufacturers' Division of the association were:

Lion Gardiner, Jaeger Machine Co., Columbus, Ohio.
O. H. Manchester, Concrete Transport Mixer Co., St. Louis, Mo.
Ray MacLean, Jaeger Machine Co., Columbus, Ohio.
H. G. Peters, The T. L. Smith Co., Milwaukee, Wis.
A. W. Thomas, Chain Belt Co., Milwaukee, Wis.
G. K. Viall, Chain Belt Co., Milwaukee, Wis.

Other guests were:

Claude L. Clark, secretary, Ohio Sand & Gravel Association, Columbus, Ohio.
Ray V. Warren, secretary, Pennsylvania Sand & Gravel Association, Pittsburgh, Penn.

The meeting had the benefit of a talk by Hal G. Sours, state highway engineer, Ohio, on the prospects of post-war highway construction in his state. He believes that there will be extensive reconstruction of heavily traveled main routes, much building in and around metropolitan centers and considerable extension of secondary roads. He believes we will be able to avoid a post-war slump, such as followed the previous World war.

## Cement Production Drops Off

BUREAU OF MINES reports that production of 11,895,000 bbl. of finished portland cement in June was 26 per cent below output in June, 1942, and also was 4 percent lower than in May, 1943. Shipments from mills during June, 1943, were nearly one-third below June, 1942, and although they advanced 5 percent over May, 1943, the gain represented a slightly less than seasonal increase and the long-term trend continued downward. Stocks of finished cement on June 30 declined 4 percent from those at the end of May, 1943, to a total of 22,084,000 bbl.

Total shipments of finished cement from mills during January-June, 1943, were 18 percent below shipments in the similar period of 1942; a less severe decline than shown by construction activity. As estimated by the Department of Commerce, total new construction activity in continental United States during the first six months of 1943 fell 24 percent from the first half of 1942. An increasing rate of decline in construction activity is indicated by the War Production Board's statement that the 14½ billion dollar Government-financed war-plant construction program was 80 percent completed and the 5 billion dollar privately-financed facilities program was 90 percent completed at the end of June.

Ratio (percent) of Production to Capacity

| | June 1942 | June 1943 | May 1943 | Apr. 1943 | Mar. 1943 |
|---|---|---|---|---|---|
| The Month... | 79.0 | 58.0 | 59.0 | 55.0 | 54.0 |
| 12 Months... | 71.0 | 69.0 | 70.0 | 72.0 | 73.0 |




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# Washington Doings and Regulations

### Prices for Sand and Gravel

O. P.A. AMENDMENT 7 to Order No. A-1, under ¶1499.159b of M.P. R. No. 188:

Order No. A-1 is amended by adding a new paragraph (a) (8) to read as follows:

(8) *Modification of maximum prices of sand and gravel.* (i) The maximum prices for washed sand and gravel produced in Shelby County, Tennessee, when sold by producers shall be as follows:

| Description of commodity | Size, inches | Maximum price per ton of 2,000 lbs. f.o.b. plant |
|---|---|---|
| Sand (all grades) | ..... | $0.70 |
| Torpedo gravel | ⅜ down | .70 |
| Concrete gravel (sand and gravel mixed) | ..... | 1.40 |
| Washed and screened gravel | 1½ to ⅝ | 1.40 |

(ii) The maximum prices for washed sand and gravel produced in Shelby County, Tennessee, when sold by dealers f. o. b. producer's plant shall be as follows:

| Description of commodity | Size, inches | Maximum price per ton of 2,000 lbs. |
|---|---|---|
| Sand (all grades) | ..... | $0.80 |
| Torpedo gravel | ⅜ down | .80 |
| Concrete gravel (sand and gravel mixed) | ..... | 1.50 |
| Washed and screened gravel | 1½ to ⅝ | 1.50 |

(iii) The maximum prices for washed sand and gravel produced in Shelby County, Tennessee, when sold by dealers delivered to job site by truck within the city limits of Memphis, shall be as follows:

| Description of commodity | Size, inches | Maximum price[1] per ton of 2,000 lbs. |
|---|---|---|
| Sand (all grades) | ..... | $1.40 |
| Torpedo gravel | ⅜ down | 1.40 |
| Concrete gravel (sand and gravel mixed) | ..... | 2.20 |
| Washed and screened gravel | 1½ to ⅝ | 2.20 |

[1] Plus 5 cents extra per ton for each ½ mile beyond city limits.
Terms—2% in 30 days.

This amendment effective July 31, 1943.

### Dead-Burned Magnesite
### Dead-Burned Grain Magnesite

(O.P.A. M.P.R. Part 136-3-R.P.S.-25)

Five kinds of dead-burned grain magnesite are defined: (a) "dead-burned grain magnesite" means a hard, dense, granular material obtained by calcining either magnesite rock, a synthetic magnesite compound produced from sea-water, or treated dolomitic rock, at a temperature high enough to form a product inert to atmospheric moisture or carbon dioxide.

It is composed essentially of magnesia (MgO), usually with a few per cent of other oxides, and includes the following: Maintenance grade of dead-burned grain magnesite, periclase, furnace magnesite, and special furnace magnesite.

(b) "Maintenance grade of domestic grain, dead-burned grain magnesite" means magnesite containing 60 to 82 percent magnesia which is virtually run-of-the-kiln and not reprocessed after leaving the kiln.

(c) "Periclase" means a dead-burned grain magnesite having a magnesia content 85 percent, or




higher, which is used in the production of basic refractory brick. Low-iron periclase is a dead-burned grain magnesite containing not less than 90 percent magnesia and not over 2 percent iron oxide.

(d) "Furnace magnesite" means a maintenance grade of dead-burned grain magnesite which is ground and screened to specification.

(e) "Special furnace magnesite" means, dead-burned grain magnesite especially grained and sized for quick setting.

(f) "Magnesite hearth ramming mix" means a specially prepared dry magnesite mixture, with or without chrome ore, containing a special bond for quicksetting purposes.

(g) "Delivered price" means the price including all commissions and freight to the railroad siding nearest the location designated by the purchaser. Prices are:

Chewelah, Wash., $22.00 per net ton for maintenance grades.

Patterson, Calif. (Westvaco) to (1) Vanadium Corp. and Mathieson Alkali Works, Inc., $40.50 per net ton; (2) to regular customers in California $32.00 per net ton f.o.b. Chewelah, Wash. (basing point).

Packaging charges allowed: Paper sacks, $4 per ton; single cloth sacks, $4; double jute sacks, $7.50 per ton; hardwood barrels, $12.50 per ton.

SEC. 6.4: Maximum prices for special furnace magnesite, f.o.b. Chewelah, Wash. (basing point):

"Sta Set"—Special C—made by the Standard Lime & Stone Co., $28.50.

"Electro Sta Set," made by the Standard Lime & Stone Co., $28.50.

"Hearth Patch," made by the Basic Refractories, Inc., $28.50.

The maximum prices set are for deliveries east of the eastern boundaries of North Dakota, South Dakota, Nebraska, Kansas, Oklahoma and Texas. To any new purchaser west of the above boundaries, it is $34.05 per net ton f.o.b. Narlo, Ohio. A delivered price in excess of the maximum f.o.b. Chewelah, Wash., price may be charged, consisting of such maximum price plus transportation in effect at the time of shipment from Chewelah to the point of delivery designated by the purchaser.

Packaging charges may be made as under Sec. 6.3 above.

SEC. 6.5. *Maximum prices for furnace magnesite.* (a) The maximum prices for furnace magnesites in

*(Continued on page 106)*





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Preformed
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# LIME SPREADERS

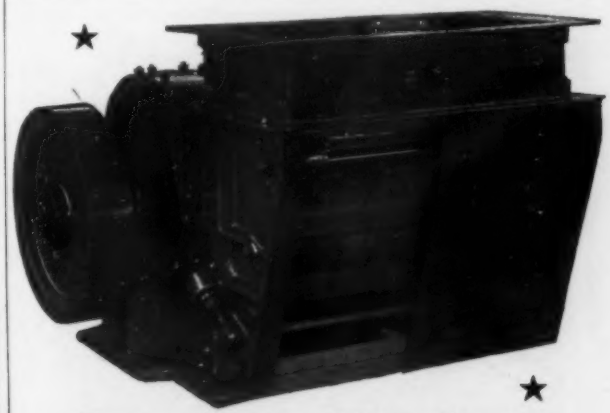
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NEW LEADER Lime Spreaders can now be purchased with extra heavy duty pintle type conveyor chain. Positive-feed, self-unloading spreader will spread wet or dry lime uniformly from 30 to 45 feet in width.

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# FINANCIAL NOTES

RECENT DIVIDENDS

| | | | |
|---|---|---|---|
| Basic Refractories | $ | .10 | Sept. 15 |
| Blue Diamond Corp. | $ | .10 | Aug. 15 |
| Calaveras Cement Co. pfd. Ac. | | .75 | Sept. 15 |
| Canada Cement Co., Ltd., 6½% pfd. (p100) (arrears) | | 1.25 | Sept. 20 |
| Consolidated Cement Corp. Cl. A | | .35 | Sept. 15 |
| Industrial Silica Corp. 6½% pfd. (p100) (arrears) | | 1.62½ | Sept. 10 |
| Lone Star Cement Corp. | | .75 | Sept. 30 |
| Louisville Cement Co. | | .50 | Aug. 1 |
| Ohio River Sand Co. 7% pfd. (p100) (arrears) | | 1.75 | Sept. 1 |
| Pacific Portland Cement Co. 6½% pfd. (p100) (arrears) | | 1.00 | July 29 |
| Pennsylvania Glass Sand Corp. 5% cum. pfd. | | 1.25 | Oct. 1 |
| Pennsylvania Glass Sand Corp | | .25 | Oct. 1 |
| Pennsylvania - Dixie Cement Corp. pfd. A | | .50 | Sept. 15 |
| Southern Phosphate Corp. | | .10 | Sept. 30 |
| U. S. Gypsum Co. | | .50 | Oct. 1 |
| U. S. Gypsum Co. 7% pfd. | | 1.75 | Oct. 1 |

•

PENNSYLVANIA GLASS SAND CORPORATION, Lewistown, Penn., showed a net profit of $312,669, after charges and provision of $622,797 for income and excess profits taxes for the six months' period ended June 30, 1943. This compares with a revised net profit of $295,927 for the first half of 1942, when income taxes amounted to $558,301.

•

PACIFIC PORTLAND CEMENT CO., San Francisco, Calif., has offered to acquire 13,942 shares of its preferred stock at $60 a share. Net profit for the first half of 1943 amounted to $275,955, after all charges which compares with a net profit of $430,755 for a like period last year. Sales for the first half of 1943 were $3,054,193 as against $3,319,343 a year ago.

•

UNITED STATES GYPSUM CO., Chicago, Ill., reported a net profit of $2,645,825, after charges and taxes, for the first six months of 1943. This compares with $2,674,460 in the first six months of 1942.

•

LONGHORN PORTLAND CEMENT CO., San Antonio, Texas, had a net profit of $122,305 for the first six months of 1943. For a like period in 1942, net profit was $290,872.

•

PEERLESS CEMENT CORPORATION, Detroit, Mich., showed a net profit of $74,876 for the six months ended June 30, 1943. This compares with $137,457 for a similar period in 1942.

•

BLUE DIAMOND CORP., Los Angeles, Calif., had a net income of $102,000 for the first six months of 1943 which compares with $112,573 a like period in 1942. Net sales in this period of 1943 were $1,932,495 as against $3,041,047 for the first six months in 1942.

•

LONE STAR CEMENT CORP., New York, N. Y., reported a net profit of $1,371,888 for the first six months of 1943 which compares with $1,381,501 for a similar period of 1942. Sales for the first six months were $7,927,219 as against $8,695,989 for the first six months in 1942.

*(Continued on page 104)*


**END CLOGGING—**
*Use Hendrick Perforated Plate*

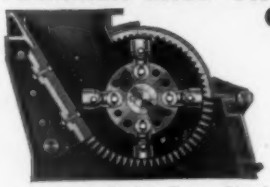


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The full clearance of the openings in Hendrick Perforated Plate eliminates clogging troubles and assures better, finer screening. Hendrick Perforated Plate is available in any size or shape of perforation, and in a wide variety of metals. It comes in single or double corrugations, and its uniform mesh is maintained for the life of the plate.

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A size built for Every Need

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Developed by Engineers who have made a Life Study of the Hammer Mill Principle for Material Reduction keeping in step wth new features to meet the demands for greater efficiency and speed.

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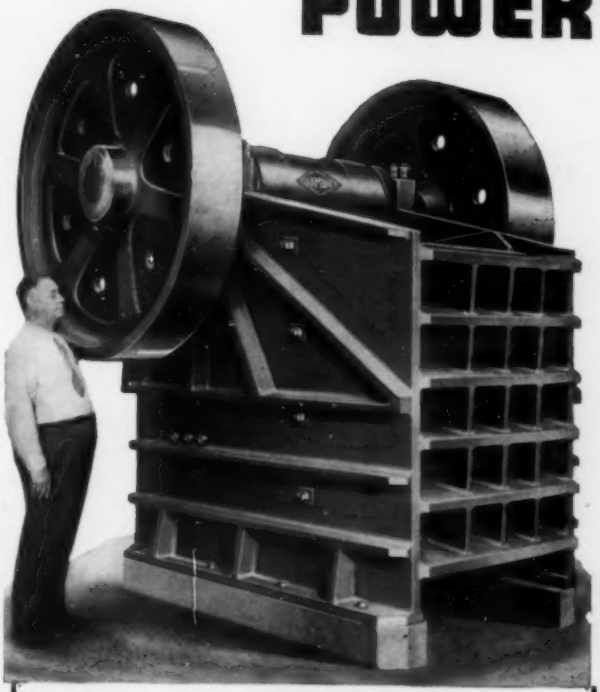
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# CRUSHING POWER



## THAT SHATTERS PRODUCTION RECORDS

**No matter how hard the rock, or how tough the production schedule, just put a DIAMOND Jaw Crusher of correct size on the job—and watch it deliver! It keeps the screens, conveyors and elevators running at capacity. Keeps the bins full—keeps costs per cubic yard or ton down—and profits up!**

### DIAMOND JAW CRUSHERS

**GIVE GREATER TONNAGE PER RATED CAPACITY**

**DIAMOND "long jaw" design delivers greater tonnage per square foot of jaw area. It produces a maximum of desired size material and a minimum of undersize. Wide jaw openings assure fast feed and discharge. Oversize bearings stand up to the hardest rock and heaviest runs. The heavy reinforced structural steel base is electric welded. Made in 10 sizes for every primary crushing need. Ask for BULLETIN D-43-D.**

**Jaw Crushers**
**Roll Crushers**
**Hammermills**
**Screens**

DIAMOND

**Conveyors**
**Bins—Feeders**
**Portable & Stationary Plants**

*Ask for new Quarry Plant Bulletin D-43-A*

**DIAMOND IRON WORKS, INC.**

ESTABLISHED 1880

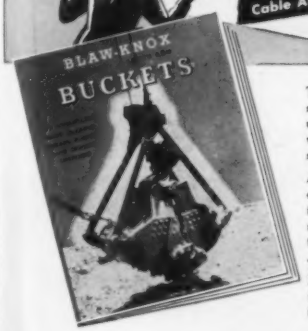
AND THE MAHR MANUFACTURING CO. DIVISION

**1800 SECOND ST. N.** **MINNEAPOLIS 11, MINN.**

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***You get Operating Advantages in* BLAW-KNOX BUCKETS *due to better Structural Features***




The rigid head in Blaw-Knox Buckets preserves fixed cable alignment between upper and lower sheaves, avoiding cable wear caused by loose or wobbly head construction.

All four corner bars are mounted directly on the head pin, thus all impact or pounding action between the head and scoop structure is transmitted directly and not through bolts or rivets.

This and many other exclusive features of Blaw-Knox Buckets are explained and illustrated in CATALOG No 1757. Write for your copy today.

BLAW-KNOX DIVISION
of BLAW KNOX COMPANY
Farmers Bank Building • Pittsburgh, Pa

46

**BLAW-KNOX** *Digging and Rehandling*
**BUCKETS**

FLORIDA PORTLAND CEMENT CO., Chicago, Ill., plant at Tampa, Fla., had a net profit of $266,938 for the first six months of 1943 as against $457,244 for a like period in 1942. Net sales for the first half of 1943 were $1,801,245 as compared with $1,730,823 for the same period of 1942.

•

PACIFIC COAST AGGREGATES, INC., San Francisco, Calif., showed a net profit of $111,447 for the three months ended March 31, 1943. This compares with $123,907 for the comparable period in 1942. Sales for the first three months in 1943 totaled $1,635,476 as compared with $997,326 for a like period in 1942.

•

PENNSYLVANIA-DIXIE CEMENT CORP., New York, N. Y., reported a net income of $951,560 for the year ended March 31, 1943, which compares with $1,053,495 for a like period ended March 31, 1942. Sales for the year ended March 31, 1943, were $11,459,656 as against $10,256,677 for the year ended March 31, 1942.

•

BRAZILIAN PORTLAND CEMENT CO., subsidiary of Canadian Foreign Investment Corp., has announced through President W. A. Black, Jr., that operations are holding up well. The problem, he said, is entirely one of shipping, with imports of oil an essential to efficient operations. Oil has been arriving more plentifully during the past half year.

•

CONSOLIDATED SAND & GRAVEL, LTD., Toronto, Ont., Canada, presented the following income account for the years ended March 31:

| | 1943 | 1942 |
|---|---|---|
| Operating profit | $88,326 | $130,963 |
| Depreciat'n & deplet'n. | †30,619 | 44,898 |
| Net operating profit | 57,707 | 86,065 |
| Other income | 10,601 | 8,611 |
| Total income | 68,308 | 94,676 |
| Income and profits tax | 44,687 | 57,421 |
| Post-war tax credit | cr4,200 | ..... |
| Net income | 27,821 | 37,256 |
| Preferred dividends | 25,200 | 49,368 |
| Surplus for year | 2,621 | d12,112 |
| Previous earned surplus | 384 | 12,496 |
| Earned surplus, 3-31 | 3,005 | 384 |
| Earnings, pfd. share | $4.42 | $5.40 |
| *Earnings, com. share | d0.23 | d0.16 |
| No. of preferred shares | 6,300 | 6,902 |
| No. of common shares | 70,000 | 70,000 |

*Disregarding preferred arrears.
†Excludes $24,816 charged to capital surplus.

•

## Open Graphite Mine

ROEDER & WITT MINING CO., Greeley, Colo., is opening the Joe Smith graphite property near Encampment, Wyo. An asbestos mine also is being opened up by this company in this area.

### COMING CONVENTIONS

**American Concrete Institute, Chicago, Ill., February 29 to March 2, 1944.**

**National Crushed Stone Association, Annual Meeting, Hotel New Yorker, New York, N. Y., January 31 to February 2, 1944.**

**National Ready Mixed Concrete Association, Annual Meeting, Hotel New Yorker, New York, N. Y., January 26 to 28, 1944.**

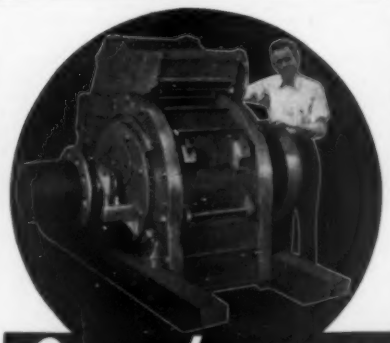
**National Safety Congress, Annual Convention, Sherman, LaSalle and Morrison Hotels, Chicago, Ill., October 5 to 7, 1943.**

**National Sand and Gravel Association, Annual Meeting, Hotel New Yorker, New York, N. Y., January 25 to 27, 1944.**


HAMMOND MULTI-WALL PAPER BAGS
HAMMOND Better Bags WELLSBURG, W.VA.
Sewn and Pasted Open Mouth and Valve Paper Bags. Your Inquiries Invited. WRITE TODAY!
HAMMOND BAG & PAPER CO.
Paper Mill and Bag Factory: WELLSBURG, W. VA.

Condor RUBBER PRODUCTS
BELTING
Conveyor, Elevator, Compensated, Transmission, Agricultural and V-Belts. Belting for every Service.
HOSE
Air, Acid, Contractors, Fire, Hydraulic, Oil and Gasoline, Steam, Sand Blast, Suction, Water, Spray and Special Hose. 81 Kinds for 81 Uses.
OTHER PRODUCTS
Chute Lining, Molded Rubber Goods, Industrial Brake Blocks and Lining, Rubber Lined Tanks, Rubber Covered Rolls — Abrasive Wheels, Bowling Balls.
Keep Ahead with MANHATTAN
THE MANHATTAN RUBBER MFG. DIVISION
of RAYBESTOS-MANHATTAN, INC.
EXECUTIVE OFFICES AND FACTORIES: PASSAIC, NEW JERSEY
111 Townsend St., Passaic, N. J.

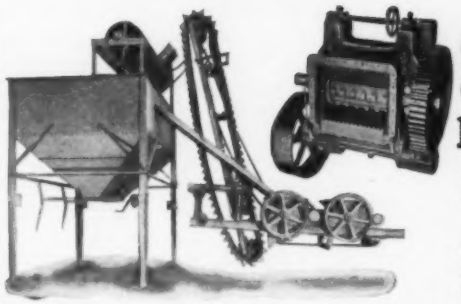
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Sectionalized Steel Frames Save Time—Money and Material.
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Specify Pioneer on your next job.
PIONEER ENGINEERING WORKS
1515 CENTRAL AVE. MINNEAPOLIS, MINNESOTA
Manufacturers of Quarry, Gravel Pit and Mining Machinery


You can do more in a "DAY"
Swing Hammer PULVERIZER
Its wide crushing range makes it serve the purpose of two or more other types of crushers. Roller bearing equipped. Write for Bulletin.
Brooks EQUIPMENT & MFG. CO. KNOXVILLE, TENNESSEE

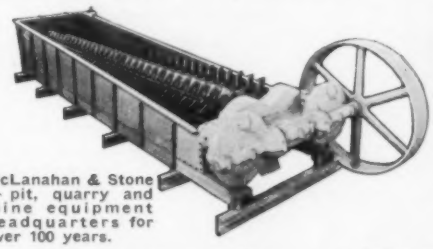
# McLANAHAN

SCREENS • CRUSHERS

COMPLETE PLANTS



McLanahan equipment will prepare your plant for more business. Single and double roll and jaw crushers, hammermills, super dry pans — steel log washers and scrubbers, sand drags, revolving and vibrating screens, elevators, conveyors, dryers, jigs, and hoists—complete portable, semi-portable and stationary crushing, screening, and washing plants for different capacities of any materials.



McLanahan & Stone — pit, quarry and mine equipment headquarters for over 100 years.

**McLanahan & Stone Corp.** *Established 1835* HOLLIDAYSBURG PENNSYLVANIA

THE PLANT THAT *QUALITY and SERVICE* BUILT



WE ARE GEAR SPECIALISTS
WE CAN SERVE YOU BETTER

SPUR · BEVEL · MITRE · SPIRAL HELICAL
INTERNAL AND WORM GEARS
*ANY MATERIAL—ANY QUANTITY*
GENERATED TOOTH RACKS · CUT SPROCKETS
PRECISION SURFACE GRINDING

*Industrial*
*Cut Gears*
*Cut Sprockets*

"CHICAGO'S FASTEST GROWING GEAR SHOP"

**INDUSTRIAL GEAR MFG. CO.**
4544 VAN BUREN STREET CHICAGO, 24 ILLINOIS

**NOW-** *MORE THAN EVER BEFORE.....*

It is necessary to install equipment with long life built into its construction. Simplicity Gyrating Screens have a proven record of long life, made during the past seventeen years of operation in 1,000 different plants, producing aggregate.

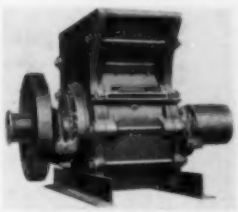
In addition, we maintain the very efficient Parts and Service Department of our company, ready at all times to provide the proper maintenance needed today to keep your equipment operating at top efficiency.

SIMPLICITY ENGINEERING CO.
DURAND - - - - MICHIGAN

*TWO-PURPOSE*

*GILSON*

*PULVERIZERS*



**LOWER LIME PRODUCTION COST**

**The GILSON No. 22 can be operated either as a Pulverizer or Crusher, and either as a stationary or portable unit.**

**Its portable feature enables the unit to be moved to transient jobs, thus reducing load hauling costs.**

**The GILSON No. 22 is a heavy-duty, large-capacity machine. Requires only 125 H.P. to operate at full capacity. Easy to service.**



**Other GILSON Pulverizers in five sizes—3 to 40-ton hourly capacity. Send for descriptive booklet, now.**



*GILSON BROS. CO.*

FOUNDRY & MACHINE WORKS
FREDONIA WISCONSIN

MORE YARDS
WITH LESS LABOR



Sauerman Scraper Handles Stockpile of Crushed Silica at Drying Plant

WHEREVER there is a problem of excavating from pit or bank, stockpiling, or other work involving haulage for any distance from 100 to 1500 ft.—it pays to find out what a Sauerman Slackline or Drag Scraper will do and what it will cost. Time and again a Sauerman machine shows a saving in comparison with any other equipment that will dig and haul an equal yardage under given conditions.

WRITE FOR CATALOG

SAUERMAN BROS., INC.
530 S. CLINTON ST., CHICAGO 7, ILLINOIS

SAUERMAN
LONG RANGE MACHINES

## Washington Doings

*(Continued from page 101)*

bulk, per net ton, f.o.b. Chewelah, Wash., are as follows:

| Mesh | Price |
|---|---|
| 4-mesh including fines | $24.00 |
| 20-mesh including fines | 27.50 |
| 48-mesh including fines | 32.50 |

(b) A delivered price in excess of the maximum f.o.b. Chewelah price may be charged consisting of such maximum price plus the transportation charge in effect at the time of shipment from Chewelah to the point of delivery designated by the purchaser. Where the purchaser requires delivery from stock accumulated at some point other than the place of production, a delivered price in excess of the maximum f.o.b. Chewelah price may be charged, consisting of such maximum price plus the transportation charge computed at the carload rate from Chewelah to the point of accumulation and from such point to the place of delivery designated by the purchaser, and $1.00 per net ton.

(c) The maximum price which any seller may charge for specially ground or screened furnace magnesite, prices for which are not listed above, shall be the highest price charged by such seller for such specially ground or screened magnesite during the month of March, 1942.

(d) The packaging charges which may be added to the maximum prices for furnace magnesite shipped from Chewelah, Wash., are the same as contained in section 6.3 (c) above.

In the event that furnace magnesite is shipped from a point other than Chewelah, Wash., the packaging charges which may be added to the maximum prices set forth shall be:

| Type of package | Per-net-ton |
|---|---|
| Paper sacks | $ 2.50 |
| Single cloth sacks | 3.50 |
| Double jute sacks | 7.50 |
| Hardwood barrels | 10.00 |

SEC. 6.6 *Maximum prices for magnesite hearth ramming mix.* The maximum prices for shipments of magnesite hearth ramming mix per net ton in sacks shall be:

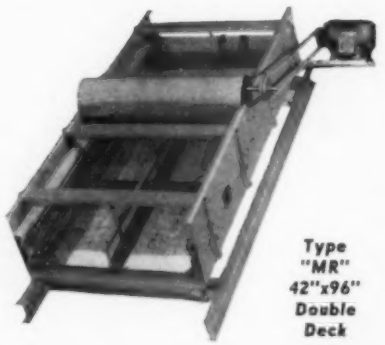
| Brand | Producers | Per net ton |
|---|---|---|
| H-W Magnamix | Harbison-Walker Refractores Co. | $54.00 |
| Magnehearth | General Refractories Company | 54.00 |
| Ramix | Basic Refractories, Inc. | 56.00 |

The maximum prices set forth above for Ramix, produced by Basic

For WET or DRY SCREENING
UNIVERSAL VIBRATORS ARE MOST IDEAL

They just can't be beat when it comes to handling your finer separations. They have that superior ability which enables them to keep the mesh clean at all times, whether your material is dry, damp, wet or sticky. Write for Catalog No. 107 It's free.

UNIVERSAL VIBRATING SCREEN CO.
RACINE — — WISCONSIN



Type "MR" 42"x96" Double Deck

PERFORATED METAL
SAND AND GRAVEL SCREENS
*Manufactured exactly to your specifications*
Any size or style screen, in thickness of steel wanted with any size perforation desired.
We can promptly duplicate your present screens at lowest prices
CHICAGO PERFORATING CO.
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CHICAGO, ILLINOIS
Canal 1459

B&W CASTINGS
ELVERITE, for wear resistance
ADAMANTINE, for abrasion-resistance, great strength and machinability
HEAT-RESISTANT CASTINGS
THE BABCOCK & WILCOX COMPANY
85 LIBERTY STREET . . . NEW YORK, N. Y.

Refractories, Inc., shall be f.o.b. Narlo, Ohio. The maximum prices for H-W Magnamix, produced by Harbison-Walker Refractories Company, and Magnehearth, produced by General Refractories Company, shall be f.o.b. Chester, Penn., and Baltimore, Md., respectively, with freight equalized from either Chester or Baltimore, whichever has the lowest transportation charge to the point of destination.

SEC. 6.7. *Maximum prices for periclase.* (a) The maximum prices per net ton for periclase, run of kiln, in bulk, shall be as follows:

| | F. o. b. Newark, Calif. | F. o. b. L'v'rmore, Calif. | F. o. b. St. Louis, Mich. |
|---|---|---|---|
| No. 85 grain | $36.00 | $39.95 | ..... |
| No. 90 grain | 36.50 | 40.45 | $46.40 |

(b) *Packaging charges.* The packaging charges which may be added to the maximum prices for periclase set forth above shall be $4.00 per net ton for shipment in paper or single cloth sacks.

### More Lime Spreaders

W.P.B. PART 1029, LIMITATION ORDER L-257 as amended August 24: Manufacturers of lime spreaders have had their quotas raised to 61 percent of their 1940 or 1941 (whichever is larger) output of items 33, 34 and 34a; wheeled hopper type spreader, horse or tractor-drawn; end gate type; trailer type, and to 100 percent of the truck body type. Small manufacturers whose total net sales did not amount to over $100,000 in 1941 are permitted to make 100 percent of their 1941 output of any type, or combination of types of lime spreaders. No quota is required for repair parts.

## Cement Shipments Restricted

THE WAR PRODUCTION BOARD has issued Schedule 1 to General Haulage Conservation Order T-1, restricting or controlling delivery of the ordinary varieties of portland cement within 93 zones surrounding various mills and group of mills. Except for deliveries entirely by water, or over an aggregate distance of 50 miles or less, no shipment of over 20,000 lbs. is permitted beyond the zone established in the order, for each mill or shipping point (in some instances like Cleveland and Milwaukee these are merely packing plants), without authorization of the W.P.B. Cement for the United States Army or Navy can originate anywhere, provided the proper officer certifies to the necessity of going outside the zone.

Tables of point of origin and the zone into which the cement may be shipped occupy 7 pages of fine print. The zones seem to cover the normal market territory of the various mills and probably the zone lines were drawn after consultation with the industry. A comparison, for example, of the shipping zones of the Calaveras Cement Co., San Andreas, and the Southwestern Portland Cement Co., Victorville, Calif. (the northernmost and the southernmost plants in a very large state, with many plants in between) shows that the two zones overlap in a belt 100 to 200 miles wide in Mono, Fresno, Kings, San Luis Obispo, Inyo, Tulare, Kern and Santa Barbara counties. Calaveras' zone includes everything north of these counties, and Victor's zone everything south. So, theoretically these two plants cover the entire state, although Calaveras is shut out of the Los Angeles market and Victor out of the San Francisco market—which probably means little in actual tonnage.

It does not appear that the W.P.B. is working in cahoots with the Federal Trade Commission.


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...the Correct Rope for your equipment

***made to meet the needs of***

**ROCK PRODUCTS OPERATORS**

- PREformed
- Internally Lubricated
- Made from selected steels
- Made by craftsmen with years of experience




**MACWHYTE COMPANY**
2949 Fourteenth Ave., Kenosha, Wis.
MILL DEPOTS: New York, Pittsburgh, Chicago
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Distributors throughout the U. S. A

**MANGANAL**

(Reg. U. S. Pat. Office. U. S. Patents 1,876,738—1,947,167—2,021,945)

**11 to 13½% Manganese Nickel Steel**

**SPECIAL SHAPE**

**APPLICATOR BARS**

**for**

**TRACTOR GROUSER REPAIRS**



**Made in 5 Sizes To Fit All Track Laying Equipment**

**Attach By Welding with Manganal Bare or Special Tite-Kote Welding Electrodes**

**SOLE PRODUCERS**

**STULZ - SICKLES COMPANY**

**134 Lafayette St.** **Newark, N. J.**

**TALCOTT BELT FASTENERS**

*for* Splicing and Patching Conveyor Elevator and Transmission Belts



*Only a Hammer Needed to Apply Talcott Fasteners*

*Write for Information*

**W. O. & M. W. Talcott, Inc.**
92 Sabin St.
PROVIDENCE, R. I.


# OBITUARIES

GOULD GRANT RHEUBY, retired vice-president, director, and member of the finance committee of Hercules Powder Co., Wilmington, Del., died recently at the age of 74. Judge Rheuby, who was judge of the 47th Judicial Circuit of Indiana from 1904 to 1909, joined Hercules as its General Counsel in April, 1913, and held that post until March, 1939. On March 5, 1918, he was elected a member of the board of directors, and in 1930, he also became a vice-president.

•

BERT B. WILLIAMS, president of the Western Rock Wool Corp., Huntington, Ind., died recently at the age of 70. Mr. Williams was born in Mitchell, Ind., and graduated from the Southern Indiana Normal College. Immediately after his graduation he took a position with the Mitchell Lime Co., of which Adam Beck was president. In a short time Mr. Williams became treasurer of the company. In 1903 he moved to Hannibal, Mo., where he was manager of the Marblehead Lime Co., Chicago, Ill., which had plants at Hannibal and Louisiana, Mo., and at Quincy and Marblehead, Ill. Later he became president of the company, which was sold in 1911. For eight years Mr. Williams was president of the Western Lime and Cement Co., Milwaukee, Wis., and also a director of the Great Lakes Portland Cement Co., Buffalo, N. Y., headed by Adam Beck, who built the company's plant in that city. In 1935 Mr. Williams founded the Western Rock Wool Co. which built a plant in Huntington, Ind. He was president and Adam Beck, with whom he had been associated for 45 years, was vice-president. The plant was sold in July of this year to the Baldwin-Hill Co., Trenton, N. J., which is continuing the business under the name of the Western Rock Wool Co.

•

CURTIS H. TRONE, assistant treasurer of the Thomasville Stone and Lime Co., Thomasville, Penn., passed away recently.

•

CARL H. SONNTAG, outstanding research chemist and electrical engineer, passed away recently. He was formerly associated with the Medusa Portland Cement Co., and the old Castalia Portland Cement Co. After building and equipping the plant of the Lawrence Portland Cement Co. at Thomaston, Me., he became gen-


**ANOTHER "PENNSYLVANIA" *REVERSIBLE* HAMMERMILL**

ready to "go on the line" in a new Cement plant designed for top efficiency in every Department.



- Major crushing by smashing impact
- Automatic hammer turning
- Product sizing control, and wear compensation, assured by Duplex cage adjustments
- Reduced power demand
- Sharply cut maintenance cost

are some of the outstanding advantages which this REVERSIBLE Hammermill will provide in the Secondary Preparation for modern Raw Side Grinding Mills.

Send for Bulletin No. 1930, and PUT YOUR REDUCTION PROBLEMS UP TO US.

PENNSYLVANIA CRUSHER COMPANY

Liberty Trust Bldg.
PHILADELPHIA, PA.

**HAYWARD BUCKETS**

**USE RIGHT BUCKET FOR THE JOB**

Hayward makes all four—clam shell dragline, electric motor, orange peel. A Hayward recommendation is unprejudiced.

THE HAYWARD COMPANY
202-204 Fulton Street
New York, N. Y.

**WILFLEY centrifugal SAND PUMPS**



for Slurries, Sand Tailings Slimes, Acid Sludges

*Save Pumping Cost*

Continuous operation without attention for long periods. Stuffing box, stuffing, gland water ALL eliminated. Close clearances maintained by easy slippage seal adjustment. Heavy pumping parts of material best suited for YOUR particular problem. Complete engineering service. Prompt shipment of parts. The most efficient and economical pump you can buy. *Write for Complete Catalog*

**A. R. WILFLEY & SONS, Inc. Denver, Colo., U. S. A.**
NEW YORK OFFICE: 1775 BROADWAY

**New and Rebuilt Equipment**

KILNS, COOLERS, DRYERS, CRUSHERS, TUBE MILLS, CRANES, ETC.
MOTORS, GENERATORS AND ELECTRICAL EQUIPMENT

*Inquiries invited. Consult us regarding your equipment problems. For prompt action, wire or phone.*

**WEBBER EQUIPMENT CO.**
17 EAST 45TH STREET NEW YORK
Phone MUrray Hill 2-6511-2-3

eral manager. Mr. Sonntag was an authority on cement mill construction, machinery and processing. His article on hot zone linings of kilns appeared in the February, 1938, issue of ROCK PRODUCTS.

•

FRED A. DABOLL, advertising manager, Warner Co., Philadelphia, Penn., died recently at the age of 70. Mr. Daboll was graduated as a civil engineer at Lehigh University in 1896



Fred A. Daboll

and was employed on construction work until he came with Charles Warner Co. in 1899 as sales manager of the Philadelphia district. In 1908 he was made general sales manager. Resigning in 1926 to go into business for himself in Georgia, he returned in 1930 to become advertising manager of Warner Co.

•

WILLIAM BEALE GATEWOOD, president, Miami Gravel Co., Huntington, W. Va., with plants in Ohio, died recently as the result of a fall from which he never completely recovered. Mr. Gatewood also was president of Langhorne & Langhorne Co., railroad contractors.

•

RICHARD PICKERING PROWELL, who operated the first sand and gravel business in Tuscaloosa, Ala., died recently at the age of 73.

## Pavement Yardage

AWARDS of concrete pavement for July, 1943, have been announced by the Portland Cement Association as follows:

| | Square Yards Awarded During July, 1943 |
|---|---|
| Roads | 648,530 |
| Streets and Alleys | 1,374,041 |
| Airports | 5,588,271 |
| | 7,610,842 |


**PULVERIZERS** for the reduction of Cement Materials, Limestone, **Agricultural Limestone,** Fire Clay and All Dry, Refractory Materials.

Capacities: 1 to 60 tons per hour — Finenesses: 20 to 350 mesh

**BRADLEY PULVERIZER CO.**

*ALLENTOWN, PENNA.*

To Increase Capacities or Fineness of Present Grinding Plant—
To Reduce Power and Maintenance Costs—
To Insure an Absolutely Uniform Product—

***Use the* BRADLEY AIR SEPARATOR**

**THE ROSS FEEDER**



Completely controls the flow of any size material from Storage Bins, Hoppers or Open-Dump Chutes to Crushers, Conveyors, Screens, etc.

High in efficiency. Low in maintenance and power consumption.

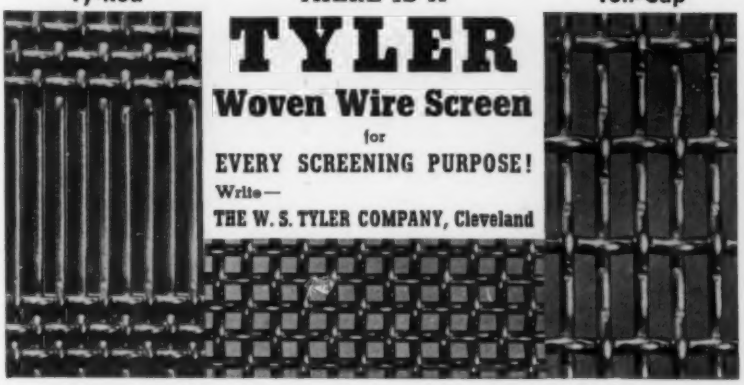
Furnished in sizes to suit your operation. Send full particulars for recommendation.

ROSS SCREEN & FEEDER CO.

19 Rector Street, NEW YORK, U. S. A. — 11 Walpole Road, SURBITON, SURREY, ENG.

Canadian Licensee: E. Long, Ltd., Orillia, Ontario

Ty-Rod — THERE IS A — Ton-Cap



**TYLER**

**Woven Wire Screen**

for

**EVERY SCREENING PURPOSE!**

Write—

**THE W. S. TYLER COMPANY, Cleveland**

**Alpha products have been used since 1878**

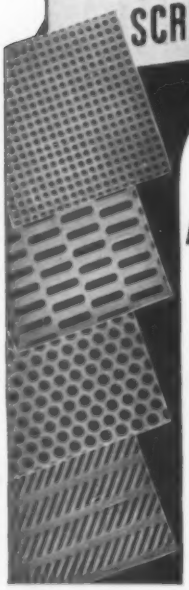
Welded Elevator Buckets all sizes. Screw and Belt Conveyors, Storage Bins any size or type. Bin Gates Special Designs—Tanks, Pressure and Storage, all sizes. Plate and Sheet Metal Specialties.

AN AA PRODUCT — ALPHA

Alpha Tank & Sheet Metal Mfg. Co.

5007 South 38th Street, St. Louis, Missouri

PERFORATED *Metal* SCREENS



Any SIZE
Any SHAPE
Any METAL
Any PERFORATION

•

You can safely specify H & K Screens and be assured of maximum screening results. Quality both in material and workmanship is always a first consideration.

*Write for prices.*

The Harrington & King PERFORATING Co.

5650 Fillmore St., Chicago 44, Ill.
114 Liberty St., New York 6, N. Y.


## Manufacturers' News

**Robins Conveyors, Inc.**, Passaic, N. J., announces that Francis O. Clukies has joined the sales staff of the company with headquarters in New York, N. Y. Mr. Clukies will specialize in products of the Mead-Morrison Division. He was with the Mead-Morrison Mfg. Co. for some 30 years before Robins bought out its materials handling business.

**Iron & Steel Products, Inc.**, Chicago, Ill., has appointed Adolph G. Schroeder manager of the machinery department, succeeding A. E. Waleski, resigned.

**The Wickwire Spencer Steel Co.**, New York, N. Y., has appointed Matthew R. Rosse sales manager of the export division, succeeding W. H. Lynn.

**Gates Rubber Co.**, Denver, Colo., has been awarded the Army-Navy "E" pennant for high achievement in war production. The presentation was made by Col. Merle M. Davis, and was accepted by Charles C. Gates, president of the company. "E" lapel insignias were presented to the employes.

**Union Wire Rope Corp.**, Kansas City, Mo., has received the third renewal of the Navy "E" Award for excellence in the production of wire rope for the Navy.

**Gar Wood Industries, Inc.**, Detroit, Mich., announces the appointment of George D. Shaeffer to the position of chief engineer of Gar Wood engineering departments. A. C. Evans was promoted to chief engineer of the road machinery division, which position was previously held by Mr. Schaeffer. I. C. Moreau was assigned the duties of chief engineer of the hoist and body division. J. E. Monahan was placed in charge of all hydraulic engineering.


FARREL BACON CRUSHERS

Complete plants designed and equipped, including Screens, Elevators and Conveyors. Machinery for Mines and Rock Quarries, Sand and Gravel Plants.

Engineering Service



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**BELT CONVEYORS**
24" x 125'
24" x 150'
30" x 120'
14" x 32'
30" x 425'

**GYRATORY REDUCTION CRUSHERS**
1—18" Telsmith Inter-Cone.
1—5½' Symons, coarse bowl.
1—Kennedy "49" with motor in pulley.

**CRUSHING ROLLS**
1—20"x14" Sturtevant, full balanced type.
1—Set 36"x16" Sturtevant.
2—40"x16" Colorado Iron Works.
1—42"x16" Allis-Chalmers.

**VIBRATING SCREENS**
9—Tyler Hummers; 3'x5', 4'x5', one and two-deck.
1—4'x6' Kennedy, double deck.
1—3'x6' Niagara.
1—2'x3' Telsmith.

**RAYMOND PULVERIZERS**
2—4 roll low side Mills, each with fan.

**HAMMER MILLS**
1—36"x24" Jeffrey Type "B" ballbearing, with U-type heavy bar hammers.
1—36"x24" No. 4XA Grinder.
1—No. 1 Williams "Regular", 25 H.P. required.

**DRACCO DUST COLLECTOR**
For handling 30 tons per hour of 20 mesh and finer material, with three Type A compartments, No. 8 Nash vacuum pump, etc. Motors included.

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2—UNUSED 10' dia. x 48", iron lined, 24" water-cooled bearings, 25 tons steel balls for each mill, Lenix lifter for flat belt drive.
1—4'6"x16", iron lined, with A.C. motor and silent chain drive.
1—5'x22" iron lined, with silent chain drive, with or without motor.

**ROTARY KILNS**
1—7'x120' Vulcan, excellent condition, complete, out of service six weeks.
1—7' & 8'x80' Traylor.
3—5'6" x 7'x80' Vulcan and Reeves.
1—5'x50' Vulcan.

**DIRECT HEAT ROTARY DRYERS**
2—4'x30' Ruggles-Coles.
1—5'6"x24' Iroquois, made by Lancaster Iron Works.
1—5'x30' Cummer.
2—5'x40' single shell.
2—6'x50' Traylor Eng. & Mfg. Co.

**BALL AND TUBE MILLS**
1—UNUSED 7'x23'9" Tube Mill, iron lined, including 400 H.P. 3/60/2200 volt slip ring motor and starting equipment.
1—5'x20' Bonnot Tube Mill, silex lined, cast steel heads, for direct gear drive.

**AIR COMPRESSORS**
1—12"x10" Ingersoll-Rand ER-1, with 50 H.P. 3/60/220 v. motor, receiver, etc.
2—12"x10" Penna. 3-A with 3/60/440 v. motors.
1—4000 CFM Nordberg, driven by 750 H.P. Diesel Engine, 100-lb. pressure.

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10—25 ft. lengths
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12" diameter cement pumping hose with rubber flanges wire reinforced and malleable iron back up flanges.
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**FOR SALE**

1—20 Ton HOWE Truck Scale.
1—18" x 144' B/G Belt Conveyor.
1—32" Telsmith Revolving Screen.
1—Sauerman Crescent Scraper, ¾ yd.
Bins—Motors—Hoist—Pumps, etc.
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3000 lb. Portable Asphalt Plant with Tanks, Dryer, Boiler-Scales.

8000 lb. Pug Mill with power and 105 ft. Hopper — Scales—Elevator.

Blaw-Knox Cement Finisher, 11-13 ft. Gas Electric Drive.

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Portable Rock Crushing Plant with 8x36 Crusher, 22x18" Rolls.

800 Ton Butler Material Bin.

2' Symons Coarse Crusher.

15x24 Jaw Crusher

48"x14' 2½ Deck Symons Screen.

*Conveyor Rolls — Belting — Truck Scales*

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**FOR SALE**

1 Ingersoll-Rand 9x8 Air Compressor.
1 7½D Gates Gyratory Crusher 42"x20".
1 Colorado Iron Works 30"x10" Improved Standard Crushing Roll, spring tension, cast steel rolls, steel enclosed.
1 Traylor Engr. Co. 5'0" dia. x 25' long Revolving Stone Screen, open end type, level gear drive.
1 Chalmers & Williams 36" Symons patent horizontal disc stone crusher.
1 National Hoisting Engine Co. 200 H.P. single geared, single drum, electric hoist, 48"x64" drum; spur gear connected to—
1 Westinghouse 200 H.P. slip ring induction motor.
1 Pneumatic toggle joint car dump, 13'x7'.
2 Koppel Kiln Stone Cars 66"x12" side dump.
1 Broughton Mixer.
1 Hair Picker.
1 A. D. Cook, size 11 vertical geared deep-well pump.
1 3½ ton Clyde Hydrator.
1 Jeffrey Mfg. Co. 42"x24" type A Swing Hammer Mill, direct connected to—
General Electric 50 H.P. Induction Motor.
1 Bucyrus 110-C Steam Shovel; caterpillar traction.
2 Steel Tanks 34'6"x80'0".
1 Iron Clad Structural Steel Building, 41'x100'.
1 General Electric Co. 50 k.w. D/C Generator—type CL-90—form B—200 amps. 250 volts—1080 R/P/M—complete with rheostat—sliding base—paper pulley.

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602 Home Bank Building
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For treating Concrete Forms and Pallets. A light colored, high paraffine content treatment for improved smooth finish results. Supplied ready to apply as a paste, or can be melted in drum for dip treatment. Cost 12c per gallon in drum lots. Discounts on larger quantities. Immediately available in any quantities.

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Kalamazoo, Michigan

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## LOCOMOTIVES SHOVELS—CRANES CARS

1—40-ton American 4-wheel, saddle tank, standard gauge, A.S.M.E. boiler, completely rebuilt.

1—33-ton Vulcan 4-wheel saddle tank, standard gauge, A.S.M.E. boiler, new firebox in 1942, first-class condition.

1—18-ton Porter 4-wheel saddle tank, 36" gauge, A.S.M.E. boiler, completely rebuilt.

1—70-ton American type 2-6-2 side tank locomotive, standard gauge.

1—40-ft. steel underframe flat car, 50 ton.
1—60-ft. steel underframe flat car, 40 ton.
8—70-ft. steel underframe flat cars, 50 ton.

1—2-yard Hayward rehandling 2-line clamshell bucket, completely overhauled.

**Birmingham Rail & Locomotive Co.**
BIRMINGHAM, ALABAMA

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Steam Driven Air Compressors
Large Steam Pumps
Guaranteed Used Pipe
Steel Buildings
Tanks of all kinds and sizes

**JOS. GREENSPON'S SON PIPE CORP.**
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McMYLER GASOLINE OPERATED CRAWLER CRANE. RATED ONE YARD CAPACITY, WITH 40 FT. BOOM. POWERED BY A CLIMAX MOD. TU ENGINE.

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120 HP. Fairbanks Diesel with Clutch Pulleys.
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870 HP. 725 KVA 3 Unit Diesel Generator Plant.
1574 ft. Sullivan Synchronous M. D. Compressor.
3—PD80 International Diesel Power Units.

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**ELECTRICAL MACHINERY**

Motors and Generators, A.C. and D.C., for sale at Attractive Prices. Large Stock. New and Rebuilt. All fully guaranteed. Send us your Inquiries.

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**BELTED:** 355, 528, 676, 1000, 1360 & 1570 Ft.
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Owen R. A. & H Stone Grapples.
2 Yd. OWEN Type S Material Handling.
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18 Steel Skips 6½ x 6 x 2½.
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⅝ Yd. 5 Ton O & S 30 Ft. Boom.
12 Ton NORTHWEST 50 Ft. Boom Gas.
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**CATERPILLAR SHOVELS**
¾ Ld. Lima Diesel.
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46—KOPPEL 1½ Yd. 24 & 30 In. Ga., V Shaped.
15—2 Yd., 3 Yd., 4 Yd., 6 Yd., 12 Yd., 36 In. Ga.
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15—Std. Ga. 50 Ton Battleship Gondolas.

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9—50 ton std. ga. heavy duty flat cars.

**HOISTING ENGINES**
Gas: 15, 30, 60, 100 & 120 HP.
Electric: 30, 52, 80, 100 & 150 HP.
Steam: 6¼x8, 7x10, 8¾x10, 10x12, 12x14.

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75, 90, 180, 200 HP. F. M. Engines.
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6x8 Pebble Mill & 5x5 Batch Mill.
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2x4½, 6x12 & 5x12 ROD MILLS.

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JEFFERY, 24x20 & No. 1 Sturtevant Ring Roll.
RAYMOND Auto Pulverizer No. 0000, 0 & 3.
RAYMOND Imp. Mills, No. 4, 32 & 55.
GRUENDLER XXB Mill & Jay Bee No. 3 & 4.
RAYMOND 4 & 5 ROLL MILLS & 5 ft. Chaser M.

**STEEL STORAGE TANKS**
10,000 Gal., 15,000 Gal. & 20,000 Gal. Cap.

**MATERIAL BIN**
116 Ton Blaw Knox 2 Compt.

**400 BARREL CEMENT BIN**
400 Barrel Butler Portable Steel Cement Bin with Fuller automatic batcher, push button control.

**SEPARATORS AND COLLECTORS**
8, 10 and 14 ft. Separators, Gayco & Bradley.

**ROLL CRUSHERS**
36x60 Fairmount & 36x20 Diamond.

**JAW CRUSHERS**
10x8, 13x7½, 14x7, 15x9, 1 x10, 16x9, 16x12, 16x10, 18x11, 20x8, 20x6, 20x10, 20x12, 26x12, 30x15, 30x13, 36x15, 36x30, 36x18, 36x14, 36x9, 36x6, 36x10, 36x24, 42x9, 48x24, 48x36, 60x42, 84x66, 36x16, 9x36.

**CONE & GYRATORY CRUSHERS**
42 in. McCully Mammoth Gyratory.
5 No. 19, 25, 37 & 49 Kennedy.
18 in., 24 in., 30 in., 36 in. & 48 in. Symons Disc.
4—10 TZ Traylor 4 ft. Gyratory.
4—Nos. 5, 3 & 6 Austin Gyratory.
2—Traylor T-12 Bulldog Gyratory, also 16 inch 8 in. Traylor T. Gyratory.
17 Gates K—Nos. 3, 4, 5, 6, 7½, 8 & 9½.
10 Inch Austin Model 105.
6, 10 & 13 Inch Superior McCullys.

**SYNCHRONOUS MOTOR GENERATORS**
100 K.W. RIDGWAY 3/60/2200-250-275 volt.
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200 K.W. RIDGWAY 3/60/2200-250-275v.,900 rpm.

**SLIP RING MOTORS**
52 HP. GEN. ELEC. 3/60/440 v., 1200 rpm.
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**CONVEYOR PARTS**
**BELT:** 1000 Ft.60 In., 700 Ft.40 In., 600 Ft.36 In., 800 Ft.30 In., 1042 Ft.24 in., 517 Ft.20 In., 297 Ft.18 In., 500 Ft.16 In., 300 Ft.14 In.
**IDLERS:** 54 In., 42 In., 36 In., 30 In., 24 In., 20 In., 18 In., 16 In. & 14 In.
Head & Tail—Pulleys—Takeup for all sizes.
Steel Frames: 2,000 Ft.24 In.,30 In.&36 In.Sections.

**ROTARY DRYERS AND KILNS**
36 In.x20 Ft., 3 Ft.x30 Ft., 4 Ft.x30 Ft., 54 In. x30 Ft., 42 In.x24 Ft., 5 Ft.x30 Ft., 5 Ft.x16 Ft., 5 Ft.x60 Ft., 6 Ft.x60 Ft., 6 Ft.x20 Ft., 6 Ft.x70 Ft., 10x20, 7½x100&8x110 Ft. Kilns.

**STEEL DERRICKS**
**GUY:** 8 Ton 85 Ft. Boom, 15 Ton 100 Ft. Boom, 20 Ton 115 Ft. Boom, 50 Ton 100 Ft. Boom.
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**LOCOMOTIVES**
**GASOLINE:** 3 Ton,5 Ton, 8 Ton, 12,14, and 30 Ton.
**STEAM:** 9 Ton, 20 Ton, 40 Ton, 60 Ton & 80 Ton.
**ELECTRIC:** 2 Ton, 5 Ton, 8 Ton, 40 Ton.
**DIESEL:** 4, 8 & 15 Ton.

**SCREENS**
**VIBRATING:** 2x4, 3x6, 12x8, 3x8, 3x5, 4x5, 4x8, 4x10, 48x72 & 4x12, 1, 2 & 3 Deck.
HUMMER ROTEX, NIAGARA & ROBINS.
**REVOLVING:** 3x12, 3x16, 3½x18, 3x24, 4x16, 4x20, 4x23, 4x24, 5x30, 5x20, 6x20.

**R. C. STANHOPE, INC.**
COMPLETE PLANTS BOUGHT AND SOLD
**60 East 42nd Street**
**New York, N. Y.**

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1—B. & W. 300 H.P. Water Tube, ASME code, 160 lbs. working pressure.
1—B. & W. 400 H.P. Water Tube, ASME code, 200 lbs. working pressure.
1—Erie City 150 H.P., HRT, 150 lbs. pressure, ASME.
1—150 H.P. Scotch Marine, National Board, 140 lbs. working pressure.

**CRANES—OVERHEAD AND GANTRY**
1—25-ton Bridge type, Gantry Crane, 60 ft. between rail centers, 50 ft. overhang each end, 220 volt, D.C.
1—8-ton, 4 motor, 36 ft. span, cage control, 220 volt, D.C.

**CRAWLER CRANE**
1—Northwest model 105 combination Shovel and Crane, 45' crane boom, ⅞-yd. shovel equipment, fairleads for dragline work.

**CRUSHING PLANT**
1—Complete Stone Crushing Plant, capacity 850 tons per day. Principle items are: 1—Farrel 24x36 Jaw Crusher; 1—Traylor 3', type TY, Reduction Crusher; 1—4x12 triple deck Screen; 1—long 24" Belt Conveyor and 1—short 18" Belt Conveyor; complete with steel bins. Plant can be operated with electric motors, all of which electrical equipment is available or can be operated with two 100 H.P. Diesel Motors and one 50 KW Diesel motor generator set. Plant all set up in working position; perfect condition throughout; immediate delivery.

**CONE CRUSHERS**
1—Nordberg (Symons) 2 ft. Cone Crusher, fine bowl.
1—Nordberg (Symons) 5½-ft. Cone Crusher, coarse bowl.

**COAL CRUSHER**
1—Link Belt 24x24, single roll, Coal Crusher; new condition.

**LOCOMOTIVES**
2—Vulcan 20-ton, 4 wheel, saddle tank, standard gauge, air brakes, ASME code boiler.
1—American 41-ton, 4 wheel, saddle tank, standard gauge, cylinders 14x22, ASME boiler, 190 lbs. working pressure; for Sale or Rent.
1—American 68-ton, 6 wheel, Switcher with tender, electric lights, air brakes, power reverse; overhauled.
1—Vulcan 14-ton, 4 wheel, saddle tank, 36" gauge, cylinders 9x14, ASME boiler.

**LOG WASHER**
1—Allis-Chalmers 25 ft., heavy duty, Hutch type, Log Washer, with steel tank, ⅝" plate, with 2 logs with paddles 35" dia.

JAW CRUSHERS, GYRATORY CRUSHERS, ROLL CRUSHERS, DRYERS AND KILNS, HOISTS, CARS, CRANES, SHOVELS, ETC.
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**A. J. O'NEILL**
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GYRATORY: 42" Gates K. 30" Superior McCully (Like new). 20" Superior McCully. Gates Nos. 12, 10, 9, 8, 7½, 6, 5, 4, 3, 2, 1 (75 avail.) Telsmith Nos. 4, 5, 6 8C, 9 & 16. Also many Austins, Kennedys and Traylors, many sizes.
JAW TYPE: Traylor 60x84, 48x60, 42x48, 24x72. Superior 84x66 & 24x36. Buchanan 30x42. Farrel 60x42, 30x36, 24x36, 18x36, 12x24. Good Roads 1030. Acme 24x40. Misc. 7x12, 9x16, 8x20, 8x24, 12x24, 9x36, 15x36.
REDUC. TYPE: Kennedy Nos. 25, 37 & 49. Telsmith 3-F & 40. Traylor 36" TZ, 8", 10", 12". Super. McCully 6"x10". Newhouse 5, 7 & 10". Symons Cone & Disc Ty. 2' to 4'.
ROLLS: Allis-C. 12¾x12, 36x10, 40x15, 54x24 & 72x30. Fairmount 36x60 & Jeffrey 24x24 to 36x54 single roll. Cornish 36x14 & 42x16, Etc., Etc.
HAMMERMILLS: Williams No. 1, 2, 3, 4, 8, & 9. Jeffrey 36x18 & 36x42. Day Nos. 20 & 40, Etc.
MILLS: Kennedy Ball 4x6, 5x6 & 5x8. Marcy 8x6 & 10x9. Hardings 6'x3', 8'x30' & 6'x9'. Misc. Tube Mills 5' & 6' x 22'. Sturtevant Ring Roll, Raymonds, Kents, Fuller Lehigh, Etc., Etc.
CRUSHING PLANTS: No. 65 Diamond No. 22 Pioneer 8x24. 1030 Good Roads, 9x40 Austin-Western, 9x36 C.R.

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Barges, Bins, Buckets, Boilers, Cableways, Cars, Compressors, Conveyors, Cranes, Dryer, Derricks, Elevators, Excavators, Generators, Hoists, Kilns, Draglines, Drag Scrapers, Dredges, Drills, Engines, Locomotives, Loaders, Motors, Pipe, Pumps, Rail, Scales, Screens, Slacklines, Shovels, Tanks, Trucks, Tractors, Etc., in many sizes, types and makes at low prices. **(I have equipment at many points in the United States and Canada. What you need may be near your plant.)**

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# WELDING RODS

**(Coated Electrodes)**

**E. COHN & SONS**
**Cedar Rapids, Iowa**

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One Model 70 Marion Railroad Type Caterpillar Mounted Steam Shovel, 3½ Yard Capacity in Very Good Condition.

**OHIO GRAVEL COMPANY**
**5225 Eastern Avenue**
**Cincinnati 26, Ohio**

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Milwaukee (Westinghouse-Baldwin) gasoline locomotives (3), 7-ton, 30" ga., 100% rebuilt.
Davenport, Porter & Vulcan steam locomotives (4), 17-20-ton, 36" ga., 10"x16" cyls., rebuilt.
Fruehauf 50-ton carryall trailer, on solids.
Newhouse 7" reduction crushers, a.c., (2).
12" Gates gyratory breaker; also 10" and 8".
Sturtevant rotary fine crusher, No. 2.
Worthington 5'x40' rotary dryer, direct, coal.
Ruggles Coles 5'x30' rotary dryer, A-8, coal.
Allis-Chalmers No.2 Pulverator hammermill, feeder.
Euclid 6-yd. bottom dump crawler wagons (8).
Pioneer 300W portable gravel washing plant.
Buckeye-Allis-Chalmers eng. gen. set, 260 HP.
Bucyrus-Erie gas-air shovel, GA-2, 1¼-yd.
Hayward 2-yd. orange peel buckets (2).
Clamshell bucket, 5-yd., rehandling or coal.
Toepfer revolving gravel screen, 48"x18'.
Freeman truck turntable, 7-10-ton, 28"x30".
Steel kiln tanks (3), 16'x32'x⅝", circular.
Nelson bucket loader, pneumatic-tired, A-1.
Bucyrus 50B steam shovel front, 2-yd., A-1.

**H. Y. SMITH CO.**
**828 N. Broadway Milwaukee 2, Wis.**

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## FOR SALE

5000—4x8x18 Steel pallets, 3 core. In good condition.

**DE YORGI BROS., INC.**
**1392 Commerce Ave. Bronx, 61, N. Y.**
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LARGE STOCK USED STEEL PLATES, STRUCTURAL SHAPES, and reconditioned steel pipe. No priority required. Immediate delivery. Inquiries invited.

**MARYLAND PIPE & METALS COMPANY**
**304 W. Church St. Hagerstown, Md.**

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## FOR SALE

One Good Roads Roller Bearing Reduction Crusher 10 x 30.

**PENN ALLEN SLAG COMPANY**
**Office: B and B Building, Allentown, Penna.**

2—Whitcomb Locomotives, Gas, 12 ton, 36" Gauge—Rebuilt.
20 ton Ohio Loco-Crane, 50 ft. boom.
Hayward 2 Yd. Orange-Peel Bucket.
¾ Yd. Model 400 P & H Shovel.
1 Yd. Link Belt K-30 Shovel.
1 Yd. Northwest 105 Shovel-Crane.
10 ton Buf-Spr. Roller, Gas, 3 Wh.
8 ton Buf-Spr. Roller, Gas, 3 Wh.
3 to 4 ton Buf-Spr. Roller, Gas, T.
1½ to 2 ton Pierce Roller, Tandem.
24x13 Farrel-Bacon Crusher.
Eimco Tunnel Shovels, 12-B and 20.
5—Electric Hoists, 40, 50 and 60 HP.
McK-T. Pile Hammers, 3, 5, 6, 7.
25-yd., 2 Compartment Steel Bin.
50 HP. Locomotive Boiler, Nat. Bd.
Barnes and LaBour self-pr. Pumps, 4".
Thor and Ing-Rand Air Pumps.
Gard-D. Compressor, 630' A. A. E. Dr.
2—Ing-Rand 110' Compressors.
22—Busters, Spades, Jackhammers, Sheeting Hammers.
1 Yd. Round Shaft Buckets.
1 Yd. and ½ Yd. Dump Buckets.
Pullshovel and Skimmer Attach. for ½ Yd. P & H.
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Shovel Attachment for 41-B Bucy-Erie.

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| 24" | 5 | 1/8" | 1/32" |
| 24" | 4 | 1/8" | 1/32" |
| 20" | 5 | 1/8" | 1/32" |
| 20" | 4 | 1/8" | 1/32" |
| 18" | 4 | 1/8" | 1/32" |
| 16" | 4 | 1/8" | 1/32" |
| 14" | 4 | 1/16" | 1/32" |
| 12" | 4 | 1/16" | 1/32" |

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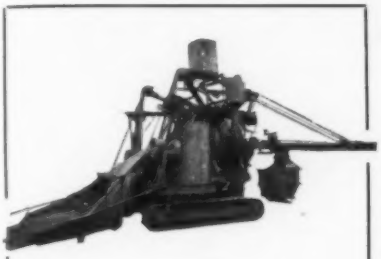
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Stevenson single roll crusher, 24"x39".
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Simplex Unit Coal Pulverizer, type 33A.
American Standard double roll crusher, 36"x30".
Sturtevant No. 0 Rotary Fine Crusher.
Williams No. 2 "SEMI-VULCANITE" Hammermill.
Williams No. 2 "REGULAR" Hammermill.
Traylor "BULLDOG" 11" gyratory crusher.
Jaw crushers—8"x14", 9"x16", 11"x20", 24"x36".

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Hummer vibrating screens and 15 cycle generators.
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48' continuous belt elevator, 18" buckets.
50' vertical chain elevator, 16" buckets.
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2-cyl, Ing.-Rand with 50 hp. Waukesha, 270'.
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**WANTED**

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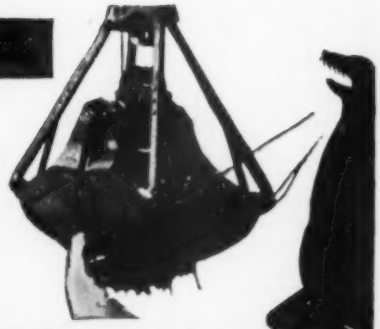
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# Index to Advertisers


Allis-Chalmers Mfg. Co....4, 5
Allis-Chalmers Mfg. Co., (Tractor Div.) ..... 10
Alpha Tank & Sheet Metal Mfg. Co. .....109
American Cable Div. ..... Inside Back Cover
American Chain & Cable Co., Inc.....36, Inside Back Cover
American Manganese Steel Co. ..... 79
American Pulverizer Co.....101
American Steel & Wire Co.. 8
Anchor Concrete Machy. Co. 92
Austin-Western Road Machy. Co. ..... 69

Babcock & Wilcox Co.....106
Bacon, Earle Co., Inc.....110
Barber-Greene Co. ..... 16, 17
Bemis Bro. Bag Co..... 21
Besser Mfg. Co..... 85
Bird Machine Co..... 3
Birmingham Rail & Locomotive Co. .....111
Blaw-Knox Co. .....103
Bradley Pulverizer Co.....109
Brill Equipment Corp.....113
Brooks Equipment & Mfg. Co. .....104
Brown-Bevis Equipment Co..111
Buckeye Traction Ditcher Co. ..... 26
Bucyrus-Erie Co. ..... Outside Back Cover
Buda Co. ..... 73
Buell Engineering Co., Inc.. 9

Carlyle Rubber Co., Inc....113
Chain Belt Co.....13, 27
Chicago Perforating Co.....106
Chicago Pneumatic Tool Co. 33
Classified Advertising...110-117
Cleveland Wire Cloth & Mfg. Co. .....118
Cohn, E., & Sons.....112
Colorado Iron Works Co... 98
Columbia Steel Co..... 8
Combustion Engineering Co., Inc. ..... 77
Commercial Shearing & Stamping Co. ..... 93
Consolidated Products Co., Inc. .....110
Continental Gin Co..... 20

Denver Equipment Co..... 65
Diamond Iron Wks.....103
du Pont, E. I., de Nemours & Co. ..... 6

Eagle Iron Works..... 96
Ensign-Bickford Co. .....120
Equipment Corp. of America .....111, 115

Fate-Root-Heath Co. ..... 81
First Machy. Corp.....115
Fuller Co. ..... 28

Gates Rubber Co.....30, 31
General Excavator Co.....103
Gilson Brothers Co.....105
Gruendler Crusher & Pulv. Co. .....102

Hammond Bag & Paper Co..104
Hardinge Co., Inc..... 22
Harrington & King Perf. Co. .....110
Hayward Co. .....108
Hazard Wire Rope Div..... 36
Heat & Power Co., Inc.....114
Hendrick Mfg. Co.....102
Highway Equipment Co., Inc. .....101

Industrial Gear Mfg. Co....105
Industrial Machy. & Sup. Co. .....116
Iowa Mfg. Co..... 29

Jackson & Church Co..... 91
Jaeger Machine Co..... 67
Jeffrey Mfg. Co..... 99
Johnson, L. E.....111

Kalamazoo Paraffin Co.....111
Kent Machine Co..... 92
Knox Mfg. Co..... 2
Koehring Co. .....119
Kremser, Frank A., & Sons, Inc. .....114

Leschen, A., & Sons Rope Co. .....101
Link-Belt Co. ..... 1
Ludlow-Saylor Wire Co..... 25

Macwhyte Co. .....107
Manhattan Rubber Mfg. Div. .....104
Marion Steam Shovel Co.... 19
McLanahan & Stone Corp...105
McLeod, Alexander T.....112
Merchants Fertilizer Co.....114
Mid-Continent Equipment Co. .....115
Murphy Diesel Co.....100

New Haven Vibrator Co.... 93
Nordberg Mfg. Co..... 24

Ohio Gravel Co.....112
O'Neill, A. J.....112
Owen Bucket Co.....118

Patron Transmission Co....116
Pennsylvania Crusher Co...108
Pettibone-Mulliken Co. .... 35
Pioneer Engineering Works.104
Plymouth Locomotive Wks.. 81

Raymond Pulv. Div..... 77
Roebling's, John A., Sons Co. ..... 34
Rollway Bearing Co..... 23
Ross Screen & Feeder Co...109
Ryerson, Jos. T., & Son, Inc. ..... 63

St. Lawrence Graphite Co..114
St. Regis Paper Co..... 75
Sauerman Brothers .....106
Schaffer Poidometer Co..... 82
Simplicity Engineering Co..105
Smidth, F. L., & Co. ..... Front Cover
Smith Engineering Works.. 11
Smith, H. Y., Co.....112
Stanhope, R. C., Inc.....112
Stearns Mfg. Co..... 89
Stephens Adamson Mfg. Co..32
Stoody Company ..... 18
Stulz-Sickles Co. .....107
Sumter Flintrock Co.....117

Talcott, W. O. & M. W., Inc.108
Traylor Engineering & Mfg. Co. ..... 7
Tyler, W. S., Co.....109

Union Wire Rope Co..... 71
United States Rubber Co... 12
United States Steel Corp... 8
Universal Concrete Pipe Co..117
Universal Vibrating Screen Co. .....106
Unverzagt, G. A., & Son...117

Vulcan Iron Works.....14, 15

Walsh, J. T.....113
Walsh, Richard P., Co.....117
Webber Equipment Co.....108
Wellman Engineering Co... 97
Whayne, Roy C., Supply Co. .....115
Wilfley, A. R., & Sons, Inc..108
Williams Patent Crusher & Pulv. Co..Inside Front Cover
James Wood .....116





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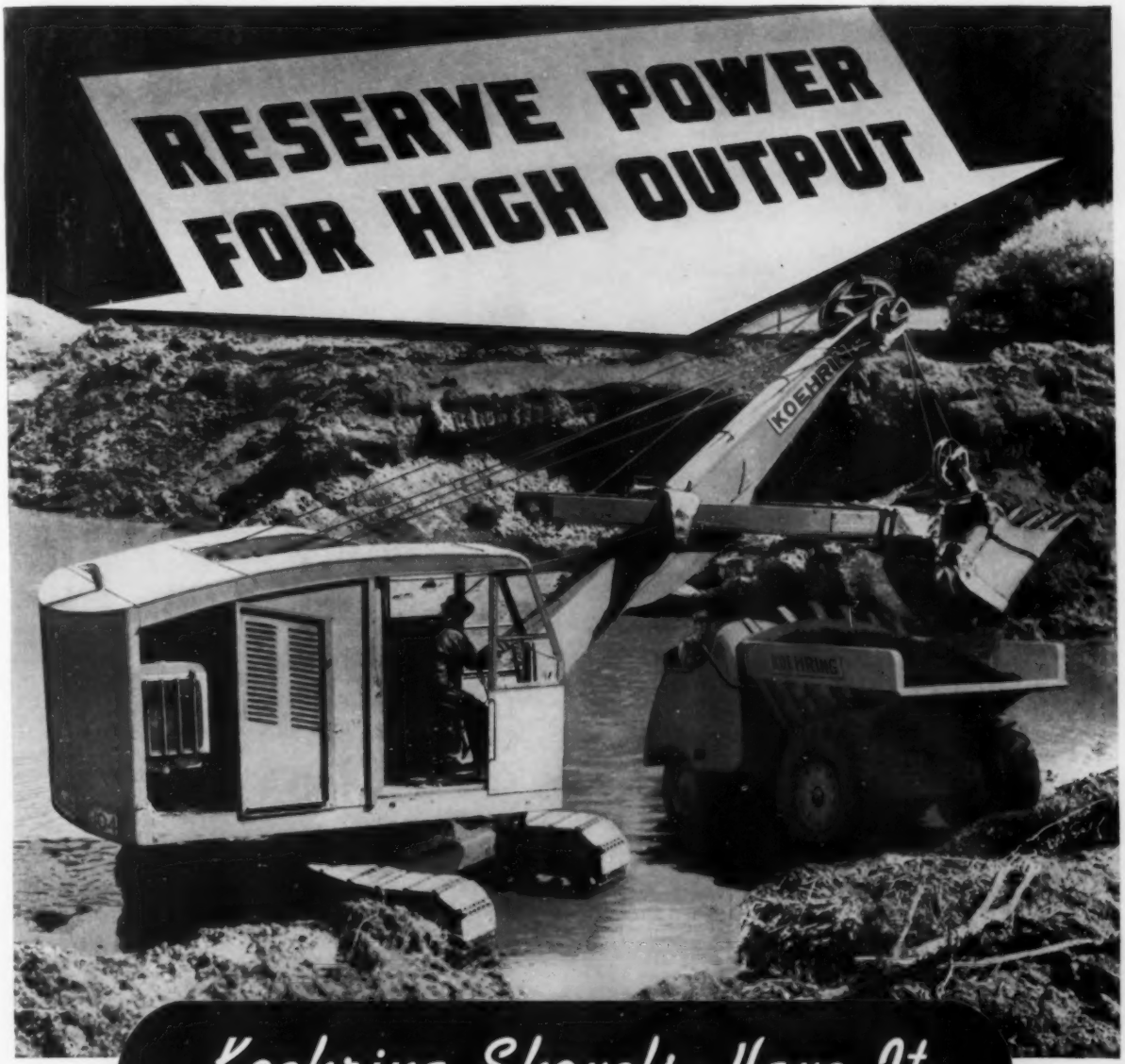
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**SIMSBURY, CONNECTICUT**

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